



**Thomas M. McDermott, Jr.**  
Mayor

**DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

**CITY OF HAMMOND**

**RONALD L. NOVAK**  
Director

**PART 70 OPERATING PERMIT RENEWAL**

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY**

and

**HAMMOND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
AIR POLLUTION CONTROL DIVISION**

**Buckeye Terminals, LLC**  
(formerly Shell Oil Products Company)  
**2400 Michigan Street**  
**Hammond, Indiana 46320**

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

**The Permittee must comply with all conditions of this permit. Noncompliance with any provisions of this permit is grounds for enforcement action; permit termination, revocation and reissuance, or modification; or denial of a permit renewal application. Noncompliance with any provision of this permit, except any provision specifically designated as not federally enforceable, constitutes a violation of the Clean Air Act. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.**

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Operation Permit No.: <b>T089-15666-00239</b>	
Issued By: Original signed by: _____ Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: <u>August 10, 2005</u>
Issued By: Original signed by: _____ Ronald L. Novak, Director Hammond Department of Environmental Management	Expiration Date: <u>August 10, 2010</u>

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**Compliance Determination Requirements**

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## SECTION A

## SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) and Hammond Department of Environmental Management (HDEM). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

### A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)] [326 IAC 2-7-1(22)]

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The Permittee owns and operates a stationary Petroleum Bulk Terminal Operation.

Responsible Official:	Vice President and General Manager
Source Address:	2400 Michigan Street, Hammond, Indiana 46320
Mailing Address:	same
General Source Phone Number:	(219) 989-8605
SIC Code:	5171 - Petroleum Bulk Terminal
County Location:	Lake County

Source Location Status:	Attainment/Unclassifiable for CO, NO <sub>2</sub> and Lead, Primary Nonattainment for SO <sub>2</sub> , Attainment for PM <sub>10</sub> , Nonattainment for PM <sub>2.5</sub> , and Severe Nonattainment for Ozone
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Source Status:	Part 70 Permit Program Major Source under PSD and Emission Offset Rules
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### A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

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- (a) One (1) Tank Truck Loading Facility, identified as 041, where distillates and denatured ethanol are bottom-loaded into tank trucks. This loading facility has four (4) loading racks with a maximum combined throughput of 60,000 gallons per hour.
- (b) One (1) Water Treatment System, identified as 046, where contaminated storm water runoff from the truck loading facility and groundwater are treated before release to the sanitary district. The Water Treatment System consists of a 20,000 gallon collection tank, an oil/water separator, a 5,000 gallon stripper feed tank, and an air stripper.
- (c) Fourteen (14) petroleum liquid (gasoline, distillate, or denatured ethanol) storage tanks, identified as tank Nos. D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92. Tank specifications are as follows:
  - (1) Storage Tank No. D-1 has an internal floating roof with a double wiper seal. The tank has a maximum capacity of 7,560,000 gallons. The tank was constructed in 1995.
  - (2) Storage Tank No. D-08F has an internal floating roof with a liquid mounted resilient seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1927.
  - (3) Storage Tank No. D-12S has an internal floating roof with a liquid mounted resilient seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1928.
  - (4) Storage Tank No. D-41 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 840,000 gallons. The tank was constructed in 1927.

- (5) Storage Tank No. D-50 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1928.
- (6) Storage Tank No. D-55 has an internal floating roof with a mechanical seal. The tank has a maximum capacity of 840,000 gallons. The tank was constructed in 1927.
- (7) Storage Tank No. D-72 has an internal floating roof with a double wiper seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1926.
- (8) Storage Tank No. D-73 has an internal floating roof with a double wiper seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1926.
- (9) Storage Tank No. D-80 has an internal floating roof with a vapor mounted primary seal and rim mounted secondary seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1927 and modified in 1998.
- (10) Storage Tank No. D-83 has an internal floating roof with a vapor mounted primary seal and rim mounted secondary seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1927 and modified in 1998.
- (11) Storage Tank No. D-85 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1926.
- (12) Storage Tank No. D-89 has an internal floating roof with a liquid mounted mechanical seal. The tank has a maximum capacity of 840,000 gallons. The tank was constructed in 1926.
- (13) Storage Tank No. D-91 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 210,000 gallons. The tank was constructed in 1928.
- (14) Storage Tank No. D-92 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 210,000 gallons. The tank was constructed in 1928.

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

- (a) The following storage tanks which emit less than one (1) ton per year of a single HAP and less than fifteen (15) pounds per day of VOC:
  - (1) Storage Tank No. D-08B is a fixed cone roof tank storing distillates with a maximum design capacity of 3,360,000 gallons. The tank was constructed in 1929. [326 IAC 8-9-6(h)]
  - (2) Storage Tank No. D-08G is a fixed cone roof tank storing distillates with a maximum design capacity of 3,120,600 gallons. The tank was constructed in 1928. [326 IAC 8-9-6(h)]
  - (3) Storage Tank No. D-13S is a fixed cone roof tank storing distillates with a maximum design capacity of 3,141,600 gallons. The tank was constructed in 1928. [326 IAC 8-9-6(h)]
  - (4) Storage Tank No. D-21 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1928. [326 IAC 8-9-6(h)]
  - (5) Storage Tank No. D-51 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
  - (6) Storage Tank No. D-52 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1927. [326 IAC 8-9-6(h)]

- (7) Storage Tank No. D-57 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
  - (8) Storage Tank No. D-74 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
  - (9) Storage Tank No. D-75 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
  - (10) Storage Tank No. D-84 is a fixed cone roof tank storing distillates with a maximum design capacity of 3,360,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
- (b) Paved and unpaved roads and parking lots with public access. [326 IAC 6-4]

A.4 Part 70 Permit Applicability [326 IAC 2-7-2]

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This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because it is a major source, as defined in 326 IAC 2-7-1(22).

## SECTION B GENERAL CONDITIONS

### B.1 Definitions [326 IAC 2-7-1]

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Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-7) shall prevail.

### B.2 Permit Term [326 IAC 2-7-5(2)] [326 IAC 2-1.1-9.5] [326 IAC 2-7-4(a)(1)(D)] [IC 15-3-6(a)]

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- (a) This permit, T089-15666-00239, is issued for a fixed term of five (5) years from the issuance date of this permit, as determined in accordance with IC 4-21.5-3-5(f) and IC 13-15-5-3. Subsequent revisions, modifications, or amendments of this permit do not affect the expiration date of this permit.
- (b) If IDEM, OAQ, and HDEM, upon receiving a timely and complete renewal permit application, fails to issue or deny the permit renewal prior to the expiration date of this permit, this existing permit shall not expire and all terms and conditions shall continue in effect, including any permit shield provided in 326 IAC 2-7-15, until the renewal permit has been issued or denied.

### B.3 Term of Conditions [326 IAC 2-1.1-9.5]

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Notwithstanding the permit term of a permit to construct, a permit to operate, or a permit modification, any condition established in a permit issued pursuant to a permitting program approved in the state implementation plan shall remain in effect until:

- (a) the condition is modified in a subsequent permit action pursuant to Title I of the Clean Air Act; or
- (b) the emission unit to which the condition pertains permanently ceases operation.

### B.4 Enforceability [326 IAC 2-7-7]

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- (a) Unless otherwise stated, all terms and conditions in this permit, including any provisions designed to limit the source's potential to emit, are enforceable by IDEM, HDEM, the United States Environmental Protection Agency (U.S. EPA) and by citizens in accordance with the Clean Air Act.
- (b) Unless otherwise stated, all terms and conditions in this permit that are local requirements, including any provisions designed to limit the source's potential to emit, are enforceable by HDEM.

### B.5 Severability [326 IAC 2-7-5(5)]

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The provisions of this permit are severable; a determination that any portion of this permit is invalid shall not affect the validity of the remainder of the permit.

### B.6 Property Rights or Exclusive Privilege [326 IAC 2-7-5(6)(D)]

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This permit does not convey any property rights of any sort, or any exclusive privilege.

### B.7 Duty to Provide Information [326 IAC 2-7-5(6)(E)]

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- (a) The Permittee shall furnish to IDEM, OAQ and HDEM, within a reasonable time, any information that IDEM, OAQ and HDEM may request in writing to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The submittal by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34). Upon request, the Permittee shall also furnish to IDEM, OAQ and HDEM copies of records required to be kept by this permit.



- (b) For information furnished by the Permittee to IDEM OAQ, the Permittee may include a claim of confidentiality in accordance with 326 IAC 17.1. When furnishing copies of requested records directly to U.S. EPA, the Permittee may assert a claim of confidentiality in accordance with 40 CFR 2, Subpart B.

B.8 Certification [326 IAC 2-7-4(f)] [326 IAC 2-7-6(1)] [326 IAC 2-7-5(3)(C)]

---

- (a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification. One (1) certification may cover multiple forms in one (1) submittal.
- (c) A responsible official is defined in 326 IAC 2-7-1(34).

B.9 Annual Compliance Certification [326 IAC 2-7-6(5)]

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- (a) The Permittee shall annually submit a compliance certification report which addresses the status of the source's compliance with the terms and conditions contained in this permit, including emission limitations, standards, or work practices. All certifications shall cover the time period from January 1 to December 31 of the previous year, and shall be submitted in letter form no later than April 15 of each year to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

and

United States Environmental Protection Agency, Region V  
Air and Radiation Division, Air Enforcement Branch - Indiana (AE-17J)  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3590

- (b) The annual compliance certification report required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ and HDEM on or before the date it is due.
- (c) The annual compliance certification report shall include the following:
  - (1) The appropriate identification of each term or condition of this permit that is the basis of the certification;
  - (2) The compliance status;
  - (3) Whether compliance was continuous or intermittent;
  - (4) The methods used for determining compliance status of the source, currently and over the reporting period consistent with 326 IAC 2-7-5(3); and

- (5) Such other facts, as specified in Sections D of this permit, as IDEM, OAQ and HDEM may require to determine the compliance status of the source.

The submittal by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

B.10 Preventive Maintenance Plan [326 IAC 2-7-5(1),(3) and (13)] [326 IAC 2-7-6(1) and (6)] [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall maintain Preventive Maintenance Plans (PMPs) including the following information on each facility:
- (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
  - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
  - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.
- (b) The Permittee shall implement the PMPs, including any required record keeping, as necessary to ensure that failure to implement a PMP does not cause or contribute to an exceedance of any limitation on emissions or potential to emit.
- (c) A copy of the PMPs shall be submitted to IDEM, OAQ and HDEM upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ and HDEM. IDEM, OAQ and HDEM may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit. The PMP does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (d) To the extent the Permittee is required by 40 CFR Part 60/63 to have an Operation, Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

B.11 Emergency Provisions [326 IAC 2-7-16]

- (a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation.
- (b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly signed, contemporaneous operating logs or other relevant evidence that describe the following:
- (1) An emergency occurred and the Permittee can, to the extent possible, identify the causes of the emergency;
  - (2) The permitted facility was at the time being properly operated;
  - (3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit;
  - (4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ and HDEM within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered;

IDEM

Telephone Number: 1-800-451-6027 (ask for Office of Air Quality, Compliance Section), or  
Telephone Number: 317-233-5674 (ask for Compliance Section)  
Facsimile Number: 317-233-5967

HDEM

Telephone Number: 219-853-6306  
Facsimile Number: 219-853-6343

- (5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:

- (A) A description of the emergency;
- (B) Any steps taken to mitigate the emissions; and
- (C) Corrective actions taken.

The notification, which shall be submitted by the Permittee, does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (6) The Permittee immediately took all reasonable steps to correct the emergency.
- (c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
  - (d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.
  - (e) IDEM, OAQ and HDEM may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4-(c)(9) be revised in response to an emergency.
  - (f) Failure to notify IDEM, OAQ and HDEM by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-7 and any other applicable rules.
  - (g) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.

- (h) The Permittee shall include all emergencies in the Quarterly Deviation and Compliance Monitoring Report.

B.12 Permit Shield [326 IAC 2-7-15] [326 IAC 2-7-20] [326 IAC 2-7-12]

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- (a) Pursuant to 326 IAC 2-7-15, the Permittee has been granted a permit shield. The permit shield provides that compliance with the conditions of this permit shall be deemed in compliance with any applicable requirements as of the date of permit issuance, provided that either the applicable requirements are included and specifically identified in this permit or the permit contains an explicit determination or concise summary of a determination that other specifically identified requirements are not applicable. The Indiana statutes from IC 13 and rules from 326 IAC, referenced in conditions in this permit, are those applicable at the time the permit was issued. The issuance or possession of this permit shall not alone constitute a defense against an alleged violation of any law, regulation or standard, except for the requirement to obtain a Part 70 permit under 326 IAC 2-7 or for applicable requirements for which a permit shield has been granted.

This permit shield does not extend to applicable requirements which are promulgated after the date of issuance of this permit unless this permit has been modified to reflect such new requirements.

- (b) If, after issuance of this permit, it is determined that the permit is in nonconformance with an applicable requirement, IDEM, OAQ or HDEM shall immediately take steps to reopen and revise this permit and issue a compliance order to the Permittee to ensure expeditious compliance with the applicable requirement until the permit is reissued. The permit shield shall continue in effect so long as the Permittee is in compliance with the compliance order.
- (c) No permit shield shall apply to any permit term or condition that is determined after issuance of this permit to have been based on erroneous information supplied in the permit application. Erroneous information means information that the Permittee knew to be false, or in the exercise of reasonable care should have been known to be false, at the time the information was submitted.
- (d) Nothing in 326 IAC 2-7-15 or in this permit shall alter or affect the following:
- (1) The provisions of Section 303 of the Clean Air Act (emergency orders), including the authority of the U.S. EPA under Section 303 of the Clean Air Act;
  - (2) The liability of the Permittee for any violation of applicable requirements prior to or at the time of this permit's issuance;
  - (3) The applicable requirements of the acid rain program, consistent with Section 408(a) of the Clean Air Act; and
  - (4) The ability of U.S. EPA to obtain information from the Permittee under Section 114 of the Clean Air Act.
- (e) This permit shield is not applicable to any change made under 326 IAC 2-7-20(b)(2) (Sections 502(b)(10) of the Clean Air Act changes) and 326 IAC 2-7-20(c)(2) (trading based on State Implementation Plan (SIP) provisions).
- (f) This permit shield is not applicable to modifications eligible for group processing until after IDEM, OAQ or HDEM has issued the modifications. [326 IAC 2-7-12(c)(7)]
- (g) This permit shield is not applicable to minor Part 70 permit modifications until after IDEM, OAQ or HDEM has issued the modification. [326 IAC 2-7-12(b)(8)]

**B.13 Prior Permits Superseded [326 IAC 2-1.1-9.5] [326 IAC 2-7-10.5]**

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- (a) All terms and conditions of permits established prior to T089-15668-00209 and issued pursuant to permitting programs approved into the state implementation plan have been either:
- (1) incorporated as originally stated,
  - (2) revised under 326 IAC 2-7-10.5, or
  - (3) deleted under 326 IAC 2-7-10.5
- (b) Provided that all terms and conditions are accurately reflected in this combined permit, all previous registrations and permits are superseded by this Part 70 operating permit.

**B.14 Termination of Right to Operate [326 IAC 2-7-10] [326 IAC 2-7-4(a)]**

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The Permittee's right to operate this source terminates with the expiration of this permit unless a timely and complete renewal application is submitted at least nine (9) months prior to the date of expiration of the source's existing permit, consistent with 326 IAC 2-7-3 and 326 IAC 2-7-4(a).

**B.15 Deviations from Permit Requirements and Conditions [326 IAC 2-7-5(3)(C)(ii)]**

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- (a) Deviations from any permit requirements (for emergencies see Section B - Emergency Provisions), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent. A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.

The Quarterly Deviation and Compliance Monitoring Report does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

**B.16 Permit Modification, Reopening, Revocation and Reissuance, or Termination  
[326 IAC 2-7-5(6)(C)] [326 IAC 2-7-8(a)] [326 IAC 2-7-9]**

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- (a) This permit may be modified, reopened, revoked and reissued, or terminated for cause. The filing of a request by the Permittee for a Part 70 permit modification, revocation and reissuance, or termination, or of a notification of planned changes or anticipated noncompliance does not stay any condition of this permit. [326 IAC 2-7-5(6)(C)] The notification by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (b) This permit shall be reopened and revised under any of the circumstances listed in IC 13-15-7-2 or if IDEM, OAQ or HDEM determines any of the following:
  - (1) That this permit contains a material mistake.
  - (2) That inaccurate statements were made in establishing the emissions standards or other terms or conditions.
  - (3) That this permit must be revised or revoked to assure compliance with an applicable requirement. [326 IAC 2-7-9(a)(3)]
- (c) Proceedings by IDEM, OAQ or HDEM to reopen and revise this permit shall follow the same procedures as apply to initial permit issuance and shall affect only those parts of this permit for which cause to reopen exists. Such reopening and revision shall be made as expeditiously as practicable. [326 IAC 2-7-9(b)]
- (d) The reopening and revision of this permit, under 326 IAC 2-7-9(a), shall not be initiated before notice of such intent is provided to the Permittee by IDEM, OAQ or HDEM at least thirty (30) days in advance of the date this permit is to be reopened, except that IDEM, OAQ and HDEM may provide a shorter time period in the case of an emergency. [326 IAC 2-7-9(c)]

B.17 Permit Renewal [326 IAC 2-7-3] [326 IAC 2-7-4] [326 IAC 2-7-8(e)]

- (a) The application for renewal shall be submitted using the application form or forms prescribed by IDEM, OAQ and HDEM, and shall include the information specified in 326 IAC 2-7-4. Such information shall be included in the application for each emission unit at this source, except those emission units included on the trivial or insignificant activities list contained in 326 IAC 2-7-1(40) and 326 IAC 2-7-1(21). The renewal application does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Request for renewal shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

- (b) A timely renewal application is one that is:
  - (1) Submitted at least nine (9) months prior to the date of the expiration of this permit; and
  - (2) If the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ and HDEM on or before the date it is due.
- (c) If the Permittee submits a timely and complete application for renewal of this permit, the source's failure to have a permit is not a violation of 326 IAC 2-7 until IDEM, OAQ and HDEM, takes final action on the renewal application, except that this protection shall cease to apply if, subsequent to the completeness determination, the Permittee fails to submit by the deadline specified in writing by IDEM, OAQ and HDEM, any additional information identified as being needed to process the application.

**B.18 Permit Amendment or Modification [326 IAC 2-7-11] [326 IAC 2-7-12]**

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- (a) Permit amendments and modifications are governed by the requirements of 326 IAC 2-7-11 or 326 IAC 2-7-12 whenever the Permittee seeks to amend or modify this permit.
- (b) Any application requesting an amendment or modification of this permit shall be submitted to:  
  
Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015  
  
and  
  
Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320  
  
Any such application shall be certified by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]
- (d) No permit amendment or modification is required for the addition, operation or removal of a nonroad engine, as defined in 40 CFR 89.2.

**B.19 Permit Revision Under Economic Incentives and Other Programs [326 IAC 2-7-5(8)] [326 IAC 2-7-12 (b)(2)]**

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- (a) No Part 70 permit revision shall be required under any approved economic incentives, marketable Part 70 permits, emissions trading, and other similar programs or processes for changes that are provided for in a Part 70 permit.
- (b) Notwithstanding 326 IAC 2-7-12(b)(1) and 326 IAC 2-7-12(c)(1), minor Part 70 permit modification procedures may be used for Part 70 modifications involving the use of economic incentives, marketable Part 70 permits, emissions trading, and other similar approaches to the extent that such minor Part 70 permit modification procedures are explicitly provided for in the applicable State Implementation Plan (SIP) or in applicable requirements promulgated or approved by the U.S. EPA.

**B.20 Operational Flexibility [326 IAC 2-7-20] [326 IAC 2-7-10.5]**

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- (a) The Permittee may make any change or changes at the source that are described in 326 IAC 2-7-20(b), (c), or (e), without a prior permit revision, if each of the following conditions is met:
  - (1) The changes are not modifications under any provision of Title I of the Clean Air Act;
  - (2) Any preconstruction approval required by 326 IAC 2-7-10.5 has been obtained;
  - (3) The changes do not result in emissions which exceed the emissions allowable under this permit (whether expressed herein as a rate of emissions or in terms of total emissions);
  - (4) The Permittee notifies the:  
  
Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

and

United States Environmental Protection Agency, Region V  
Air and Radiation Division, Regulation Development Branch - Indiana (AR-18J)  
77 West Jackson Boulevard  
Chicago, Illinois 60604-3590

in advance of the change by written notification at least ten (10) days in advance of the proposed change. The Permittee shall attach every such notice to the Permittee's copy of this permit; and

- (5) The Permittee maintains records on-site which document, on a rolling five (5) year basis, all such changes and emissions trading that are subject to 326 IAC 2-7-20(b), (c), or (e) and makes such records available, upon reasonable request, for public review.

Such records shall consist of all information required to be submitted to IDEM, OAQ and HDEM in the notices specified in 326 IAC 2-7-20(b)(1), (c)(1), and (e)(2).

- (b) The Permittee may make Section 502(b)(10) of the Clean Air Act changes (this term is defined at 326 IAC 2-7-1(36)) without a permit revision, subject to the constraint of 326 IAC 2-7-20(a). For each such Section 502(b)(10) of the Clean Air Act change, the required written notification shall include the following:

- (1) A brief description of the change within the source;
- (2) The date on which the change will occur;
- (3) Any change in emissions; and
- (4) Any permit term or condition that is no longer applicable as a result of the change.

The notification which shall be submitted is not considered an application form, report or compliance certification. Therefore, the notification by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (c) Emission Trades [326 IAC 2-7-20(c)]  
The Permittee may trade increases and decreases in emissions in the source, where the applicable SIP provides for such emission trades without requiring a permit revision, subject to the constraints of Section (a) of this condition and those in 326 IAC 2-7-20(c).
- (d) Alternative Operating Scenarios [326 IAC 2-7-20(d)]  
The Permittee may make changes at the source within the range of alternative operating scenarios that are described in the terms and conditions of this permit in accordance with 326 IAC 2-7-5(9). No prior notification to IDEM, OAQ or U.S. EPA is required.
- (e) Backup fuel switches specifically addressed in, and limited under, Section D of this permit shall not be considered alternative operating scenarios. Therefore, the notification requirements of part (a) of this condition do not apply.



B.21 Source Modification Requirement [326 IAC 2-7-10.5]

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A modification, construction, or reconstruction is governed by the requirements of 326 IAC 2 and 326 IAC 2-7-10.5.

B.22 Inspection and Entry [326 IAC 2-7-6] [IC 13-14-2-2] [IC 13-30-3-1] [IC 13-7-3-2]

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Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, HDEM and U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a Part 70 source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, have access to and copy any records that must be kept under the conditions of this permit;
- (c) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, inspect any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit;
- (d) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, sample or monitor substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and
- (e) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

B.23 Transfer of Ownership or Operational Control [326 IAC 2-7-11]

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- (a) The Permittee must comply with the requirements of 326 IAC 2-7-11 whenever the Permittee seeks to change the ownership or operational control of the source and no other change in the permit is necessary.
- (b) Any application requesting a change in the ownership or operational control of the source shall contain a written agreement containing a specific date for transfer of permit responsibility, coverage and liability between the current and new Permittee. The application shall be submitted to:

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, IN 46320

The application which shall be submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]

**B.24 Annual Fee Payment [326 IAC 2-7-19] [326 IAC 2-7-5(7)][326 IAC 2-1.1-7]**

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- (a) The Permittee shall pay annual fees to IDEM, OAQ and HDEM within thirty (30) calendar days of receipt of a billing. Pursuant to 326 IAC 2-7-19(b), if the Permittee does not receive a bill from IDEM, OAQ and HDEM the applicable fee is due April 1 of each year.
- (b) Except as provided in 326 IAC 2-7-19(e), failure to pay may result in administrative enforcement action or revocation of this permit.
- (c) The Permittee may call the following telephone numbers: 1-800-451-6027 or 317-233-4230 (ask for OAQ, Billing, Licensing, and Training Section), to determine the appropriate permit fee.

**B.25 Credible Evidence [326 IAC 2-7-5(3)] [326 IAC 2-7-6] [62 FR 8314]**

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For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any condition of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the Permittee would have been in compliance with the condition of this permit if the appropriate performance or compliance test or procedure had been performed.

## SECTION C

## SOURCE OPERATION CONDITIONS

Entire Source
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### Emission Limitations and Standards [326 IAC 2-7-5(1)]

#### C.1 Opacity [326 IAC 5-1]

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

- (a) Opacity shall not exceed an average of twenty percent (20%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

#### C.2 Open Burning [326 IAC 4-1] [IC 13-17-9]

The Permittee shall not open burn any material except as provided in 326 IAC 4-1-3, 326 IAC 4-1-4 or 326 IAC 4-1-6. The previous sentence notwithstanding, the Permittee may open burn in accordance with an open burning approval issued by the Commissioner under 326 IAC 4-1-4.1. 326 IAC 4-1-3(a)(2)(A) and (B) are not federally enforceable.

#### C.3 Incineration [326 IAC 4-2] [326 IAC 9-1-2]

The Permittee shall not operate an incinerator or incinerate any waste or refuse except as provided in 326 IAC 4-2 and 326 IAC 9-1-2. 326 IAC 9-1-2 is not federally enforceable.

#### C.4 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions). 326 IAC 6-4-2(4) is not federally enforceable.

#### C.5 Asbestos Abatement Projects [326 IAC 14-10] [326 IAC 18][40 CFR 61, Subpart M]

- (a) Notification requirements apply to each owner or operator. If the combined amount of regulated asbestos containing material (RACM) to be stripped, removed or disturbed is at least 260 linear feet on pipes or 160 square feet on other facility components, or at least thirty-five (35) cubic feet on all facility components, then the notification requirements of 326 IAC 14-10-3 are mandatory. All demolition projects require notification whether or not asbestos is present.
- (b) The Permittee shall ensure that a written notification is sent on a form provided by the Commissioner at least ten (10) working days before asbestos stripping or removal work or before demolition begins, per 326 IAC 14-10-3, and shall update such notice as necessary, including, but not limited to the following:
  - (1) When the amount of affected asbestos containing material increases or decreases by at least twenty percent (20%); or
  - (2) If there is a change in the following:
    - (A) Asbestos removal or demolition start date;
    - (B) Removal or demolition contractor; or

(C) Waste disposal site.

- (c) The Permittee shall ensure that the notice is postmarked or delivered according to the guidelines set forth in 326 IAC 14-10-3(2).
- (d) The notice to be submitted shall include the information enumerated in 326 IAC 14-10-3(3).

All required notifications shall be submitted to:

Indiana Department of Environmental Management  
Asbestos Section, Office of Air Quality  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

The notice shall include a signed certification from the owner or operator that the information provided in this notification is correct and that only Indiana licensed workers and project supervisors will be used to implement the asbestos removal project. The notifications do not require a certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (e) Procedures for Asbestos Emission Control  
The Permittee shall comply with the applicable emission control procedures in 326 IAC 14-10-4 and 40 CFR 61.145(c). Per 326 IAC 14-10-1, emission control requirements are applicable for any removal or disturbance of RACM greater than three (3) linear feet on pipes or three (3) square feet on any other facility components or a total of at least 0.75 cubic feet on all facility components.
- (f) Demolition and Renovation  
The Permittee shall thoroughly inspect the affected facility or part of the facility where the demolition or renovation will occur for the presence of asbestos pursuant to 40 CFR 61.145(a).
- (g) Indiana Accredited Asbestos Inspector  
The Permittee shall comply with 326 IAC 14-10-1(a) that requires the owner or operator, prior to a renovation/demolition, to use an Indiana Accredited Asbestos Inspector to thoroughly inspect the affected portion of the facility for the presence of asbestos. The requirement to use an Indiana Accredited Asbestos inspector is not federally enforceable.

**Testing Requirements [326 IAC 2-7-6(1)]**

**C.6 Performance Testing [326 IAC 3-6]**

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- (a) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, utilizing any applicable procedures and analysis methods specified in 40 CFR 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this permit, shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ and HDEM not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ and HDEM, if the source submits to IDEM, OAQ and HDEM a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

#### **Compliance Requirements [326 IAC 2-1.1-11]**

##### C.7 Compliance Requirements [326 IAC 2-1.1-11]

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The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

#### **Compliance Monitoring Requirements [326 IAC 2-7-5(1)] [326 IAC 2-7-6(1)]**

##### C.8 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

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Unless otherwise specified in this permit, all monitoring and record keeping requirements not already legally required shall be implemented within thirty (30) days of permit issuance. If required by Section D, the Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment. If due to circumstances beyond its control, equipment cannot be installed and operated within thirty (30) days, the Permittee may extend the compliance schedule related to the equipment for an additional thirty (30) days provided the Permittee notifies:

Indiana Department of Environmental Management  
Compliance Branch, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

in writing, prior to the end of the initial thirty (30) day compliance schedule, with full justification of the reasons for the inability to meet this date.

The notification which shall be submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

Unless otherwise specified in the approval for the new emission unit(s), compliance monitoring for new emission units or emission units added through a source modification shall be implemented when operation begins.

**C.9 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]**

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Any monitoring or testing required by Section D of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR 60, Appendix A, 40 CFR 60 Appendix B, 40 CFR 63, or other approved methods as specified in this permit.

**C.10 Pressure Gauge and Other Instrument Specifications [326 IAC 2-1.1-11] [326 IAC 2-7-5(3)][326 IAC 2-7-6(1)]**

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- (a) Whenever a condition in this permit requires the measurement of pressure drop across any part of the unit or its control device, the gauge employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent ( $\pm 2\%$ ) of full scale reading.
- (b) Whenever a condition in this permit requires the measurement of a temperature, the instrument employed shall have a scale such that the expected normal reading shall be no less than twenty percent (20%) of full scale and be accurate within plus or minus two percent (2%) of full scale reading.
- (c) The Permittee may request the IDEM, OAQ or HDEM approve the use of a pressure gauge or other instrument that does not meet the above specifications provided the Permittee can demonstrate an alternative pressure gauge or other instrument specification will adequately ensure compliance with permit conditions requiring the measurement of pressure drop or other parameters.

**Corrective Actions and Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]**

**C.11 Emergency Reduction Plans [326 IAC 1-5-2] [326 IAC 1-5-3]**

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Pursuant to 326 IAC 1-5-2 (Emergency Reduction Plans; Submission):

- (a) The Permittee prepared and submitted written emergency reduction plans (ERPs) consistent with safe operating procedures on March 11, 1991.
- (b) Upon direct notification by IDEM, OAQ or HDEM, that a specific air pollution episode level is in effect, the Permittee shall immediately put into effect the actions stipulated in the approved ERP for the appropriate episode level. [326 IAC 1-5-3]

**C.12 Risk Management Plan [326 IAC 2-7-5(12)] [40 CFR 68]**

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If a regulated substance, as defined in 40 CFR 68 is present at a source in more than a threshold quantity, the source must comply with the applicable requirements of 40 CFR 68.

**C.13 Compliance Response Plan - Preparation, Implementation, Records, and Reports [326 IAC 2-7-5] [326 IAC 2-7-6]**

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- (a) The Permittee is required to prepare a Compliance Response Plan (CRP) for each compliance monitoring condition of this permit. If a Permittee is required to have an Operation, Maintenance and Monitoring (OMM) Plan under 40 CFR 60/63, such plans shall be deemed to satisfy the requirements for a CRP for those compliance monitoring conditions. A CRP shall be submitted to IDEM, OAQ and HDEM upon request. The CRP shall be prepared within ninety (90) days after issuance of this permit by the Permittee, supplemented from time to time by the Permittee, maintained on site, and comprised of:

- (1) Reasonable response steps that may be implemented in the event that a response step is needed pursuant to the requirements of Section D of this permit; and an expected timeframe for taking reasonable response steps.
- (2) If, at any time, the Permittee takes reasonable response steps that are not set forth in the Permittee's current Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan and the Permittee documents such response in accordance with subsection (e) below, the Permittee shall amend its Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan to include such response steps taken.

The OMM Plan shall be submitted within the time frames specified by the applicable 40 CFR 60/63 requirement.

- (b) For each compliance monitoring condition of this permit, reasonable response steps shall be taken when indicated by the provisions of that compliance monitoring condition as follows:
  - (1) Reasonable response steps shall be taken as set forth in the Permittee's current Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan; or
  - (2) If none of the reasonable response steps listed in the Compliance Response Plan or Operation, Maintenance and Monitoring (OMM) Plan is applicable or responsive to the excursion, the Permittee shall devise and implement additional response steps as expeditiously as practical. Taking such additional response steps shall not be considered a deviation from this permit so long as the Permittee documents such response steps in accordance with this condition.
  - (3) If the Permittee determines that additional response steps would necessitate that the emissions unit or control device be shut down, and it will be ten (10) days or more until the unit or device will be shut down, then the Permittee shall promptly notify the IDEM, OAQ and HDEM of the expected date of the shut down. The notification shall also include the status of the applicable compliance monitoring parameter with respect to normal, and the results of the response actions taken up to the time of notification.
  - (4) Failure to take reasonable response steps shall be considered a deviation of the permit.
- (c) The Permittee is not required to take any further response steps for any of the following reasons:
  - (1) A false reading occurs due to the malfunction of the monitoring equipment and prompt action was taken to correct the monitoring equipment.
  - (2) The Permittee has determined that the compliance monitoring parameters established in the permit conditions are technically inappropriate, has previously submitted a request for a minor permit modification to the permit, and such request has not been denied.
  - (3) An automatic measurement was taken when the process was not operating.
  - (4) The process has already returned or is returning to operating within "normal" parameters and no response steps are required.
- (d) When implementing reasonable steps in response to a compliance monitoring condition, if the Permittee determines that an exceedance of an emission limitation has occurred, the Permittee shall report such deviations pursuant to Section B-Deviations from Permit Requirements and Conditions.

- (e) The Permittee shall record all instances when, in accordance with Section D, response steps are taken. In the event of an emergency, the provisions of 326 IAC 2-7-16 (Emergency Provisions) requiring prompt corrective action to mitigate emissions shall prevail.
- (f) Except as otherwise provided by a rule or provided specifically in Section D, all monitoring as required in Section D shall be performed when the emission unit is operating, except for time necessary to perform quality assurance and maintenance activities.

**C.14 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5] [326 IAC 2-7-6]**

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- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one-hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to noncompliant stack tests.

The response action documents submitted pursuant to this condition do require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

**Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

**C.15 Emission Statement [326 IAC 2-7-5(3)(C)(iii)] [326 IAC 2-7-5(7)] [326 IAC 2-7-19(c)] [326 IAC 2-6]**

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- (a) In accordance with the compliance schedule specified in 326 IAC 2-6-3(b)(1), the Permittee shall submit by July 1 an emission statement covering the previous calendar year as follows:
  - (1) starting in 2007 and every three (3) years thereafter, and
  - (2) any year not already required under (1) if the source emits volatile organic compounds or oxides of nitrogen into the ambient air at levels equal to or greater than twenty-five (25) tons during the previous calendar year.
- (b) The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4(c) and shall meet the following requirements:
  - (1) Indicate estimated actual emissions of all pollutants listed in 326 IAC 2-6-4(a);
  - (2) Indicate estimated actual emissions of regulated pollutants as defined by 326 IAC 2-7-1 (32) ("Regulated pollutant, which is used only for purposes of Section 19 of this rule") from the source, for purpose of fee assessment.

The emission statement must be submitted to:

Indiana Department of Environmental Management  
Technical Support and Modeling Section, Office of Air Quality  
100 North Senate Avenue, P.O. Box 6015  
Indianapolis, Indiana 46206-6015



and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

The emission statement does require the certification by the responsible official as defined by 326 IAC 2-7-1(34).

- (c) The emission statement required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ and HDEM on or before the date it is due.

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C.16 General Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-6]

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- (a) Records of all required monitoring data, reports and support information required by this Permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner or HDEM makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner and HDEM within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.

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C.17 General Reporting Requirements [326 IAC 2-7-5(3)(C)] [326 IAC 2-1.1-11]

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- (a) The source shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported. This report shall be submitted within thirty (30) days of the end of the reporting period. The Quarterly Deviation and Compliance Monitoring Report shall include the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (b) The report required in (a) of this condition and reports required by conditions in Section D of this permit shall be submitted to:

Indiana Department of Environmental Management  
Compliance Data Section, Office of Air Quality  
100 North Senate Avenue, P. O. Box 6015  
Indianapolis, Indiana 46206-6015

and

Hammond Department of Environmental Management  
5925 Calumet Avenue  
Hammond, Indiana 46320

- (c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ and HDEM on or before the date it is due.

- (d) Unless otherwise specified in this permit, all reports required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (e) Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.

### **Stratospheric Ozone Protection**

#### **C.18 Compliance with 40 CFR 82 and 326 IAC 22-1**

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Pursuant to 40 CFR 82 (Protection of Stratospheric Ozone), Subpart F, except as provided for motor vehicle air conditioners in Subpart B, the Permittee shall comply with the standards for recycling and emissions reduction:

- (a) Persons opening appliances for maintenance, service, repair, or disposal must comply with the required practices pursuant to 40 CFR 82.156.
- (b) Equipment used during the maintenance, service, repair, or disposal of appliances must comply with the standards for recycling and recovery equipment pursuant to 40 CFR 82.158.
- (c) Persons performing maintenance, service, repair, or disposal of appliances must be certified by an approved technician certification program pursuant to 40 CFR 82.161.

## SECTION D.1

## FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-7-5(15)]: Tank Truck Loading Facility

One (1) Tank Truck Loading Facility, identified as 041, where distillates and denatured ethanol are bottom-loaded into tank trucks. This loading facility has four (4) loading racks with a maximum combined throughput of 60,000 gallons per hour. (The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Emission Limitations and Standards [326 IAC 2-7-5(1)]

#### D.1.1 Volatile Organic Compounds (VOC) [Hammond Ordinance No. 3522 as amended] [326 IAC 12] [40 CFR 60, Subpart XX]

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- (a) Pursuant to the Hammond Air Quality Control Ordinance No. 3522 (as amended), the VOC emissions from the Tank Truck Loading Facility shall be limited to 1.546 lbs/hr; 6.77 TPY.
- (b) Only denatured ethanol and distillate having a Reid vapor pressure less than twenty-seven and six-tenths (27.6) kilopascals may be loaded at the Tank Truck Loading Facility.
- (c) Prior to loading liquid product into any tank truck, the Permittee shall obtain a certification from the driver attesting that the truck did not contain gasoline on the immediately previous load. The Permittee shall review the certifications on a quarterly basis and shall report any instances where product was loaded into a truck containing gasoline vapors on the Quarterly Deviation and Compliance Monitoring Report.

#### D.1.2 Hazardous Air Pollutants (HAPs) [Hammond Ordinance No. 3522 as amended]

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Pursuant to the Hammond Air Quality Control Ordinance No. 3522 (as amended), the HAPs emissions from the Tank Truck Loading Facility shall be limited to 0.132 lbs/hr; 0.577 TPY.

### Compliance Determination Requirements

#### D.1.3 Testing Requirements [326 IAC 2-7-6(1)]

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Testing of this facility is not specifically required by this permit. However, if testing is required, compliance shall be determined by a performance test conducted in accordance with Section C - Performance Testing. This does not preclude testing requirements on this facility under 326 IAC 2-7-5 and 326 IAC 2-7-6.

### Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

#### D.1.4 Record Keeping Requirements [Hammond Ordinance No. 3522 as amended] [326 IAC 12] [40 CFR 60, Subpart XX]

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- (a) Records of the type, amount, and the maximum true vapor pressure of the distillates and denatured ethanol loaded on a daily basis shall be maintained and made available upon request by IDEM, OAQ or HDEM.
- (b) The certification required in Condition D.1.1(c) shall include the following information: date, time, product being loaded, product loaded on the immediately previous shipment, name of the trucking firm or owner, phone number of the trucking firm or owner, printed name of the driver, and signature of the driver attesting to the accuracy of the information provided. The certifications shall be maintained for a minimum of 2 years and made available upon request by IDEM, OAQ or HDEM.

## SECTION D.2

## FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-7-5(15)]: Water Treatment System

One (1) One (1) Water Treatment System, identified as 046, where contaminated storm water runoff from the truck loading facility and groundwater are treated before release to the sanitary district. The Water Treatment System consists of a 20,000 gallon collection tank, an oil/water separator, a 5,000 gallon stripper feed tank, and an air stripper. (The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Emission Limitations and Standards [326 IAC 2-7-5(1)]

#### D.2.1 Volatile Organic Compound (VOC) [Hammond Ordinance No. 3522 as amended]

Pursuant to Construction Permit No. 369 and Operation Permit No. 00722, the total VOC emissions from the Air Stripper shall be limited to 2.469 lbs/hr and 10.814 TPY.

### Compliance Determination Requirements

#### D.2.2 Testing Requirements [326 IAC 2-7-6(1)]

Testing of this facility is not specifically required by this permit. However, this does not preclude testing requirements on this facility under 326 IAC 2-7-5 and 326 IAC 2-7-6.

### Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]

#### D.2.3 Monitoring [Hammond Ordinance No. 3522 as amended]

The influent and effluent of the Air Stripper shall be sampled for total VOC and BETX (Benzene, Ethylbenzene, Toluene, and Xylene) once per calendar quarter.

### Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

#### D.2.4 Record Keeping Requirements [Hammond Ordinance No. 3522 as amended]

- (a) Volume (in gallons) of contaminated water processed through the Air Stripper per day.
- (b) Operating hours of the Air Stripper per day.

#### D.2.5 Reporting Requirements [Hammond Ordinance No. 3522 as amended]

A quarterly summary of the information to document compliance with Conditions D.2.3 and D.2.4 shall be submitted to HDEM within thirty (30) days after the end of each calendar quarter.

## SECTION D.3

## FACILITY OPERATION CONDITIONS

### Facility Description [326 IAC 2-7-5(15)]: Storage Tanks

Fourteen (14) petroleum liquid (gasoline, distillate, or denatured ethanol) storage tanks, identified as tank Nos. D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92. Tank specifications are as follows:

- (a) Storage Tank No. D-1 has an internal floating roof with a double wiper seal. The tank has a maximum capacity of 7,560,000 gallons. The tank was constructed in 1995.
- (b) Storage Tank No. D-08F has an internal floating roof with a liquid mounted resilient seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1927.
- (c) Storage Tank No. D-12S has an internal floating roof with a liquid mounted resilient seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1928.
- (d) Storage Tank No. D-41 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 840,000 gallons. The tank was constructed in 1927.
- (e) Storage Tank No. D-50 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1928.
- (f) Storage Tank No. D-55 has an internal floating roof with a mechanical seal. The tank has a maximum capacity of 840,000 gallons. The tank was constructed in 1927.
- (g) Storage Tank No. D-72 has an internal floating roof with a double wiper seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1926.
- (h) Storage Tank No. D-73 has an internal floating roof with a double wiper seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1926.
- (i) Storage Tank No. D-80 has an internal floating roof with a vapor mounted primary seal and rim mounted secondary seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1927 and modified in 1998.
- (j) Storage Tank No. D-83 has an internal floating roof with a vapor mounted primary seal and rim mounted secondary seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1927 and modified in 1998.
- (k) Storage Tank No. D-85 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1926.
- (l) Storage Tank No. D-89 has an internal floating roof with a liquid mounted mechanical seal. The tank has a maximum capacity of 840,000 gallons. The tank was constructed in 1926.
- (m) Storage Tank No. D-91 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 210,000 gallons. The tank was constructed in 1928.
- (n) Storage Tank No. D-92 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 210,000 gallons. The tank was constructed in 1928.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

## Emission Limitations and Standards [326 IAC 2-7-5(1)]

### D.3.1 General Provisions Relating to NSPS [326 IAC 12-1] [40 CFR 60, Subpart A]

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The provisions of 40 CFR 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, applies to tank D-1, except when otherwise specified in 40 CFR 60, Subpart Kb.

### D.3.2 Storage Vessels [326 IAC 8-9-4(a)] [326 IAC 12] [40 CFR 60, Subpart Kb]

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Pursuant to 326 IAC 8-9-4(b) or 40 CFR 60.112b(b), tanks D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92 shall not store a volatile organic liquid (VOL) with a vapor pressure greater than or equal to eleven and one-tenth (11.1) psia as stored.

### D.3.3 Storage Vessels [326 IAC 8-9-4(c)] [326 IAC 8-4-3(b)] [326 IAC 12] [40 CFR 60, Subpart Kb]

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Pursuant to 326 IAC 8-9-4(c) or 40 CFR 60.112b(a), tanks D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92 shall be equipped with a fixed roof in combination with an internal floating roof meeting the following:

- (a) The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof.
- (b) The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage tank is completely emptied and refilled.
- (c) When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.
- (d) Each internal floating roof shall be equipped with one (1) of the following closure devices between the wall of the vessel and the edge of the internal floating roof:
  - (1) A foam or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal).
  - (2) Two (2) seals mounted one (1) above the other so that each forms a continuous closure that completely covers the space between the wall of the vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous.
  - (3) A mechanical shoe seal that consists of a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric, or envelope, spans the annular space between the metal sheet and the floating roof.
- (e) The facility is maintained such that there are no visible holes, tears, or other openings in the seal or any seal fabric or materials.
- (f) Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.
- (g) Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e.; no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.
- (h) Automatic bleeder vents shall be equipped with a gasket and are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.

- (i) Rim space vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.
- (j) Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.
- (k) Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.
- (l) Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

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**D.3.4 Preventive Maintenance Plan [326 IAC 2-7-5(13)]**

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A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for these facilities.

**Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]**

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**D.3.5 Monitoring [326 IAC 8-9-5(b)] [326 IAC 12] [40 CFR 60, Subpart Kb]**

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Pursuant to 326 IAC 8-9-5(b) or 40 CFR 60.113b(a), the owner or operator of tanks D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92 shall:

- (a) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to the filling of the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the Permittee shall repair the items before filling the storage vessel.
- (b) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the Permittee shall repair the items or empty and remove the storage vessel from service within 45 days. If a failure that is detected in this paragraph cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from IDEM, OAQ and HDEM in the inspection report required in 40 CFR 60.115b(a)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions that the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.
- (c) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), gaskets, slotted membranes, and sleeve seals (if any) each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the Permittee shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years.
- (d) Notify EPA, IDEM, OAQ and HDEM in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by paragraph (a) and (c) of this section to afford IDEM, OAQ and HDEM the opportunity to have an observer present. If the inspection required by (c) of this section is not planned and the Permittee could not have known about the inspection 30 days in advance of refilling the tank, the Permittee shall notify IDEM, OAQ and HDEM at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written

documentation may be made in writing and sent by express mail so that it is received by the IDEM, OAQ and HDEM at least 7 days prior to refilling.

**Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]**

D.3.6 Record Keeping Requirements [326 IAC 8-9-6] [326 IAC 8-4-3(d)] [326 IAC 12] [40 CFR 60, Subpart Kb]

- (a) In accordance with 326 IAC 8-9-6(b) and 326 IAC 12 for tanks D-80 and D-83, the owner or operator of tanks D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92 shall maintain records of each vessel including the vessel identification number, dimensions, capacity, and a description of the emission control equipment shall be maintained for the life of the vessel.
- (b) In accordance with 326 IAC 8-9-6(c) or 40 CFR 60.115b(a), a record of each inspection performed as required under Condition D.3.5 shall be maintained and shall identify the following:
  - (1) The vessel identification number
  - (2) The date of the inspection
  - (3) The observed condition of the seal, internal floating roof, and fittings.
- (c) Pursuant to 326 IAC 8-4-3(d) and 40 CFR 60.116b, the Permittee shall maintain a record of the petroleum liquid or VOL stored in tanks D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92, the period of storage, the maximum true vapor pressure of that liquid as stored, and the results of the inspections performed on the storage vessels.
- (d) The Permittee shall maintain all records necessary to demonstrate compliance with the Preventive Maintenance Plan required by Condition D.3.4 and outline in Condition B.10.
- (e) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

D.3.7 Reporting Requirements [326 IAC 8-9-6(c)(3)] [326 IAC 12] [40 CFR 60, Subpart Kb]

A report of any defects (the internal floating roof is not resting on the surface of the VOL, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric) discovered during the annual inspection required in D.3.5 shall be furnished to the IDEM, OAQ and HDEM within thirty (30) days of the inspection. The report shall identify the vessel identification number, the nature of the defects, and the date the vessel was emptied or the nature of and date the repair was made.



## SECTION D.4 FACILITY OPERATION CONDITIONS - INSIGNIFICANT ACTIVITIES

### Facility Description [326 IAC 2-7-5(15)]: Insignificant Activities

The following storage tanks which emit less than one (1) ton per year of a single HAP and less than fifteen (15) pounds per day of VOC:

- (a) Storage Tank No. D-08B is a fixed cone roof tank storing distillates with a maximum design capacity of 3,360,000 gallons. The tank was constructed in 1929.
- (b) Storage Tank No. D-08G is a fixed cone roof tank storing distillates with a maximum design capacity of 3,120,600 gallons. The tank was constructed in 1928.
- (c) Storage Tank No. D-13S is a fixed cone roof tank storing distillates with a maximum design capacity of 3,141,600 gallons. The tank was constructed in 1928.
- (d) Storage Tank No. D-21 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1928.
- (e) Storage Tank No. D-51 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926.
- (f) Storage Tank No. D-52 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1927.
- (g) Storage Tank No. D-57 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926.
- (h) Storage Tank No. D-74 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926.
- (i) Storage Tank No. D-75 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926.
- (j) Storage Tank No. D-84 is a fixed cone roof tank storing distillates with a maximum design capacity of 3,360,000 gallons. The tank was constructed in 1926.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

### Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

#### D.4.1 Record Keeping Requirements [326 IAC 8-9-6(h)]

In accordance with 326 IAC 8-9-6(h), the owner or operator of tanks D-08B, D-08G, D-13S, D-21, D-51, D-52, D-57, D-74, D-75, and D-84 shall record the type of liquid stored in the tanks and the liquid's maximum true vapor pressure on a daily basis.

#### D.4.2 Reporting Requirements [326 IAC 8-9-6(h)]

In accordance with 326 IAC 8-9-6(h), the owner or operator of tanks D-08B, D-08G, D-13S, D-21, D-51, D-52, D-57, D-74, D-75, and D-84, shall notify the IDEM, OAQ and HDEM within thirty (30) days when the maximum true vapor pressure of the liquid in the tanks exceeds seventy-five hundredths (0.75) psia.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
and  
HAMMOND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
  
PART 70 OPERATING PERMIT  
CERTIFICATION**

Source Name: Buckeye Terminals, LLC  
Source Address: 2400 Michigan Street, Hammond, Indiana 46320  
Mailing Address: same  
Part 70 Permit No.: T089-15666-00239

**This certification shall be included when submitting monitoring, testing reports/results  
or other documents as required by this permit.**

Please check what document is being certified:

- ☐ Annual Compliance Certification Letter
- ☐ Emergency/Deviation Occurrence Reporting Form
- ☐ Test Result (specify)
- ☐ Report (specify)
- ☐ Notification (specify)
- ☐ Other (specify)

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE BRANCH  
P.O. Box 6015  
100 North Senate Avenue  
Indianapolis, Indiana 46206-6015  
Phone: 317-233-5674  
Fax: 317-233-5967**

and

**HAMMOND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
5925 Calumet Avenue  
Hammond, Indiana 46320  
Phone: 219-853-6306  
Fax: 219-853-6343**

**PART 70 OPERATING PERMIT  
EMERGENCY OCCURRENCE REPORT**

Source Name: Buckeye Terminals, LLC  
Source Address: 2400 Michigan Street, Hammond, Indiana 46320  
Mailing Address: same  
Part 70 Permit No.: T089-15666-00239

**This form consists of 2 pages**

**Page 1 of 2**

<p>— This is an emergency as defined in 326 IAC 2-7-1(12)</p> <ul style="list-style-type: none"><li>• The Permittee must notify the Office of Air Quality (OAQ) and the Hammond Department of Environmental Management (HDEM), within four (4) business hours (1-800-451-6027 or 317-233-5674, ask for Compliance Section) and (219-853-6306, for HDEM); and</li><li>• The Permittee must submit notice in writing or by facsimile within two (2) working days (Facsimile Number: 317-233-5967, IDEM and 219-853-6343, HDEM), and follow the other requirements of 326 IAC 2-7- 16.</li></ul>
---

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency:
Describe the cause of the Emergency:

If any of the following are not applicable, mark N/A

Page 2 of 2

Date/Time Emergency started:
Date/Time Emergency was corrected:
Was the facility being properly operated at the time of the emergency?      Y      N Describe:
Type of Pollutants Emitted: TSP, PM-10, SO <sub>2</sub> , VOC, NO <sub>x</sub> , CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/response steps taken:
Describe the measures taken to minimize emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed by:
Title/Position:
Date:
Phone:

A certification is not required for this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF AIR QUALITY  
COMPLIANCE DATA SECTION  
and  
HAMMOND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**

**PART 70 OPERATING PERMIT  
QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT**

Source Name: Buckeye Terminals, LLC  
Source Address: 2400 Michigan Street, Hammond, Indiana 46320  
Mailing Address: same  
Part 70 Permit No.: T089-15666-00239

Months: \_\_\_\_\_ to \_\_\_\_\_ Year: \_\_\_\_\_

Page 1 of 2

This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. A deviation required to be reported pursuant to an applicable requirement that exists independent of the permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. Additional pages may be attached if necessary. If no deviations occurred, please specify in the box marked "No deviations occurred this reporting period".	
<input type="checkbox"/> NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.	
<input type="checkbox"/> THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	

Page 2 of 2

<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	
<b>Permit Requirement</b> (specify permit condition #)	
<b>Date of Deviation:</b>	<b>Duration of Deviation:</b>
<b>Number of Deviations:</b>	
<b>Probable Cause of Deviation:</b>	
<b>Response Steps Taken:</b>	

Form Completed by:
Title/Position:
Date:
Phone:

Attach a signed certification to complete this report.

**Indiana Department of Environmental Management  
Office of Air Quality**

and

**Hammond Department of Environmental Management  
Air Pollution Control Division**

Technical Support Document (TSD) for a  
Part 70 Operating Permit Renewal

**Source Background and Description**

**Source Name:** Buckeye Terminals, LLC (formerly Shell Oil Products Company)  
**Source Location:** 2400 Michigan Street, Hammond, Indiana 46320  
**County:** Lake  
**SIC Code:** 5171 Petroleum Bulk Terminal  
**Operation Permit No.:** T089-15666-00239  
**Permit Reviewer:** Thomas J. Nyhan, HDEM

The Hammond Department of Environmental Management (HDEM) has reviewed a Part 70 permit renewal application from Shell Oil Products U.S. relating to the operation of a **Petroleum Bulk Terminal Operation**. Subsequent to the submittal of the renewal application, Shell sold the terminal to Buckeye Terminals, LLC.

**Permitted Emission Units and Pollution Control Equipment**

This stationary source consists of the following permitted emission units and pollution control devices:

- (a) One (1) Tank Truck Loading Facility, identified as 041, where distillates and denatured ethanol are bottom-loaded into tank trucks. This loading facility has four (4) loading racks with a maximum combined throughput of 60,000 gallons per hour.
- (b) One (1) Water Treatment System, identified as 046, where contaminated storm water runoff from the truck loading facility and groundwater are treated before release to the sanitary district. The Water Treatment System consists of a 20,000 gallon collection tank, an oil/water separator, a 5,000 gallon stripper feed tank, and an air stripper.
- (c) Fourteen (14) petroleum liquid (gasoline, distillate, or denatured ethanol) storage tanks, identified as tank Nos. D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92. Tank specifications are as follows:
  - (1) Storage Tank No. D-1 has an internal floating roof with a double wiper seal. The tank has a maximum capacity of 7,560,000 gallons. The tank was constructed in 1995.
  - (2) Storage Tank No. D-08F has an internal floating roof with a liquid mounted resilient seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1927.
  - (3) Storage Tank No. D-12S has an internal floating roof with a liquid mounted resilient seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1928.
  - (4) Storage Tank No. D-41 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 840,000 gallons. The tank was constructed in 1927.

- (5) Storage Tank No. D-50 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1928.
- (6) Storage Tank No. D-55 has an internal floating roof with a mechanical seal. The tank has a maximum capacity of 840,000 gallons. The tank was constructed in 1927.
- (7) Storage Tank No. D-72 has an internal floating roof with a double wiper seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1926.
- (8) Storage Tank No. D-73 has an internal floating roof with a double wiper seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1926.
- (9) Storage Tank No. D-80 has an internal floating roof with a vapor mounted primary seal and rim mounted secondary seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1927 and modified in 1998.
- (10) Storage Tank No. D-83 has an internal floating roof with a vapor mounted primary seal and rim mounted secondary seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1927 and modified in 1998.
- (11) Storage Tank No. D-85 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 3,360,000 gallons. The tank was constructed in 1926.
- (12) Storage Tank No. D-89 has an internal floating roof with a liquid mounted mechanical seal. The tank has a maximum capacity of 840,000 gallons. The tank was constructed in 1926.
- (13) Storage Tank No. D-91 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 210,000 gallons. The tank was constructed in 1928.
- (14) Storage Tank No. D-92 has an internal floating roof with a vapor mounted seal. The tank has a maximum capacity of 210,000 gallons. The tank was constructed in 1928.

### **Unpermitted Emission Units and Pollution Control Equipment**

There are no unpermitted facilities operating at this source during this review process.

### **New Emission Units and Pollution Control Equipment Receiving Advanced Source Modification Approval**

The source is not seeking advanced source modification approval for new emission units.

### **Insignificant Activities**

The source also consists of insignificant activities with potential uncontrolled emissions below the exemption levels specified in 326 IAC 2-1.1-3(d)(1), including these defined in 326 IAC 2-7-1(21):

- (a) The following storage tanks which emit less than one (1) ton per year of a single HAP and less than fifteen (15) pounds per day of VOC:
  - (1) Storage Tank No. D-08B is a fixed cone roof tank storing distillates with a maximum design capacity of 3,360,000 gallons. The tank was constructed in 1929. [326 IAC 8-9-6(h)]
  - (2) Storage Tank No. D-08G is a fixed cone roof tank storing distillates with a maximum design capacity of 3,120,600 gallons. The tank was constructed in 1928. [326 IAC 8-9-6(h)]
  - (3) Storage Tank No. D-13S is a fixed cone roof tank storing distillates with a maximum design capacity of 3,141,600 gallons. The tank was constructed in 1928. [326 IAC 8-9-6(h)]



- (4) Storage Tank No. D-21 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1928. [326 IAC 8-9-6(h)]
- (5) Storage Tank No. D-51 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
- (6) Storage Tank No. D-52 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1927. [326 IAC 8-9-6(h)]
- (7) Storage Tank No. D-57 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
- (8) Storage Tank No. D-74 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
- (9) Storage Tank No. D-75 is a fixed cone roof tank storing distillates with a maximum design capacity of 840,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
- (10) Storage Tank No. D-84 is a fixed cone roof tank storing distillates with a maximum design capacity of 3,360,000 gallons. The tank was constructed in 1926. [326 IAC 8-9-6(h)]
- (b) Natural gas-fired combustion sources with heat input equal to or less than ten million (10,000,000) Btu per hour.
- (c) Propane or liquified petroleum gas, or butane-fired combustion sources with heat input equal to or less than six million (6,000,000) Btu per hour.
- (d) Storage tanks with capacity less than or equal to 1,000 gallons and annual throughputs less than 12,000 gallons.
- (e) Vessels storing lubricating oils, hydraulic oils, machining oils, and machining fluids.
- (f) Process vessel degassing and cleaning to prepare for internal repairs.
- (g) Paved and unpaved roads and parking lots with public access. [326 IAC 6-4]
- (h) Equipment used to collect any material that might be released during a malfunction, process upset, or spill cleanup. The equipment includes: catch tanks, temporary liquid separators, tanks, and fluid handling equipment.
- (i) Groundwater oil recovery wells.
- (j) Activities associated with the treatment of wastewater streams with an oil and grease content less than or equal to one percent (1%) by volume.
- (k) Stockpiled soils from soil remediation activities that are covered and waiting transport for disposal.

### Existing Approvals

The source has been operating under the previous approvals including, but not limited to:

- (a) Part 70 Operating Permit T089-7323-00239, issued on March 4, 1998.
- (b) First Administrative Amendment AAT089-10084-00239, issued on October 20, 1998, (name change from Shell to Equilon, added tanks D-08G and D-13S, changed service in tanks D-80 and D-83 from diesel to gasoline).

- (c) Second Administrative Amendment AAT089-10943-00239, issued on June 4, 1999, (added internal float pan to Tank D-84 and changed service from diesel to gasoline).
- (d) Third Administrative Amendment AAT089-11274-00239, issued on August 27, 1999, (authorized loading and storage of ethanol).
- (e) First Minor Source Modification MSM 15946, issued on October 1, 2002 and First Significant Permit Modification SPM 16445, issued on December 4, 2002 (installation of Tanks D-2 and D-3). These tanks were never installed and will not be included in the Part 70 Renewal.
- (f) A request for a name change was submitted by Buckeye Terminals, LLC on September 3, 2004. Buckeye Terminals, LLC purchased the Hammond terminal from Shell Oil Products U.S. on October 1, 2004.

All conditions from previous approvals were incorporated into this Part 70 permit renewal.

### Enforcement Issue

There are no enforcement actions pending.

### Recommendation

The staff recommends to the Commissioner that the Part 70 permit renewal be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An administratively complete Part 70 permit renewal application for the purposes of this review was received on May 28, 2002.

### Emission Calculations

See Appendix A of this document for detailed emissions calculations (seventy-three (73) pages).

### Potential To Emit

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA.”

The source was issued a Part 70 Operating Permit on March 4, 1998. The table below summarizes the potential to emit, reflecting all limits, of the emission units. Any control equipment is considered enforceable only after issuance of the original Part 70 operating Permit and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

Process/facility	Potential to Emit (tons/year)						
	PM	PM-10	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	HAPs
Tank Truck Load Racks	NA	NA	NA	3.30	NA	NA	0.01
Water Treatment System	NA	NA	NA	0.14	NA	NA	0.01
Fourteen (14) Storage Tanks	NA	NA	NA	116.21	NA	NA	4.28
Insignificant Activities	NA	NA	NA	4.49	NA	NA	0.09
Fugitive Emissions	NA	NA	NA	1.64	NA	NA	0.06
Total Emissions	-	-	-	125.8	-	-	4.45

The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of volatile organic compounds (VOC) are equal to or greater than 25 tons per year and the source is located in Lake County. Therefore, the source is subject to the provisions of 326 IAC 2-7 – Part 70 Permit Program.

### Actual Emissions

The following table shows the actual emissions from the source. This information reflects the 2003 OAQ emission data submitted by the source.

Pollutant	Actual Emissions (tons/year)
PM	0
PM-10	0
SO <sub>2</sub>	0
VOC	65.35
CO	0
NO <sub>x</sub>	0
Total HAPs	2.71

### County Attainment Status

The source is located in Lake County.

40 CFR 81.315 – (Indiana) – (7/1/00 Edition)	
Pollutant	Status
PM10	Attainment
PM2.5	Nonattainment
SO <sub>2</sub>	Primary Nonattainment
NO <sub>x</sub>	Attainment
1-hour Ozone	Severe Nonattainment
8-hour Ozone	Moderate Nonattainment
CO	Maintenance Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) and Nitrogen Oxides (NO<sub>x</sub>) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone.
  - (1) On January 26, 1996 in 40 CFR 52.777(i), the U.S. EPA granted a waiver of the requirements of Section 182(f) of the CAA for Lake and Porter Counties, including the lower NO<sub>x</sub> threshold for nonattainment new source review. Therefore, VOC emissions alone are considered when evaluating the rule applicability relating to the 1-hour ozone standards. Lake County has been designated as nonattainment in Indiana for the 1-hour ozone standard. Therefore, VOC emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3. See the State Rule Applicability for the source section.
  - (2) VOC and NO<sub>x</sub> emissions are considered when evaluating the rule applicability relating to the 8-hour ozone standard. Lake County has been designated as nonattainment for the 8-hour ozone standard. Therefore, VOC and NO<sub>x</sub> emissions were reviewed pursuant to the requirements for nonattainment new source review.
- (b) Lake County has been classified as attainment in Indiana for PM10, CO, and Lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability for the source section.
- (c) Lake County has been classified as nonattainment in Indiana for SO<sub>2</sub>. Therefore, these emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3. See the State Rule Applicability for the source section.

- (d) U.S.EPA in Federal Register Notice 70 FR 943 dated January 5, 2005 has designated Lake County as nonattainment for PM<sub>2.5</sub>. On March 7, 2005 the Indiana Attorney General's Office on behalf of IDEM filed a law suit with the Court of Appeals for the District of Columbia Circuit challenging U.S. EPA's designation of non-attainment areas without sufficient data. However, in order to ensure that sources are not potentially liable for violation of the Clean Air Act, the OAQ is following the U.S. EPA's guidance to regulate PM<sub>10</sub> emissions as surrogate for PM<sub>2.5</sub> emissions pursuant to the Non-attainment New Source Review requirements. See the State Rule Applicability for the source section.

## Part 70 Permit Conditions

This source is subject to the requirements of 326 IAC 2-7, pursuant to which the source has to meet the following:

- (a) Emission limitations and standards, including those operational requirements and limitations that assure compliance with all applicable requirements at the time of issuance of Part 70 permits.
- (b) Monitoring and related record keeping requirements which assume that all reasonable information is provided to evaluate continuous compliance with the applicable requirements.

## Federal Rule Applicability

### 40 CFR 60 - New Source Performance Standards - NSPS

New Source Performance Standard, 326 IAC 12, (40 CFR 60.500 through 60.506, Subpart XX: Standards of Performance for Bulk Gasoline Terminals)

The Tank Truck Loading Facility, identified as 041, is not subject to the rule because it was not constructed or modified after December 17, 1980. The Tank Truck Loading Facility would become subject to the rule if a liquid product is loaded into a gasoline tank truck. For the purpose of this subpart a gasoline tank truck is defined as any truck in which gasoline is being loaded or a truck which contained gasoline as its previous load. To ensure that the Tank Truck Loading Facility does not load product into a gasoline tank truck, the source will be required to keep records of the material loaded into each tank truck and document that each tank truck in which liquid product is loaded did not contain gasoline on the truck's previous load.

New Source Performance Standard, 326 IAC 12, (40 CFR 60.110 through 60.113, Subpart K: Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973 and Prior to May 19, 1978)

Tanks D-1, D-08B, D-08F, D-08G, D-12S, D-13S, D-21, D-41, D-50, D-51, D-52, D-55, D-57, D-72, D-73, D-74, D-75, D-80, D-83, D-84, D-85, D-89, D-91, and D-92 are not subject to the rule because they were not constructed, reconstructed or modified between the aforementioned dates.

New Source Performance Standard, 326 IAC 12, (40 CFR 60.110a, Subpart Ka: Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978 and Prior to July 23, 1984)

Tanks D-1, D-08B, D-08F, D-08G, D-12S, D-13S, D-21, D-41, D-50, D-51, D-52, D-55, D-57, D-72, D-73, D-74, D-75, D-80, D-83, D-84, D-85, D-89, D-91, and D-92 are not subject to the rule because they were not constructed, reconstructed or modified between the aforementioned dates.

New Source Performance Standard, 326 IAC 12, (40 CFR 60.110b, Subpart Kb: Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification commenced After July 23, 1984)

Tanks D-08B, D-08F, D-08G, D-12S, D-13S, D-21, D-41, D-50, D-51, D-52, D-55, D-57, D-72, D-73, D-74, D-75, D-84, D-85, D-89, D-91, and D-92 are not subject to the rule because they were not constructed, reconstructed or modified after July 23, 1984. Even though tanks D-80 and D-83 have capacities greater than 151 cubic meters, they are exempt

from the rule because the volatile organic liquid stored in these tanks has a maximum true vapor pressure less than 3.5 kPa. The Permittee will be required to notify HDEM and IDEM within 30 days of when the maximum true vapor pressure of the liquid in Tanks D-80 and D-83 exceeds 5.2 kPa. Tank D-1 was modified after July 23, 1984, has a capacity greater than 151 cubic meters, and stores volatile organic liquids with maximum true vapor pressures over 5.2 kPa, therefore Tank D-1 is subject to the rule.

- (a) Pursuant to 40 CFR 60.112b(a), the Tank D-1 shall be equipped with a fixed roof in combination with an internal floating roof meeting the following specifications:
- (1) The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage tank is completely emptied and refilled. When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.
  - (2) Each internal floating roof shall be equipped with a foam- or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal), or two (2) seals mounted one above the other so that each forms a continuous closure that completely covers the space between the wall of the storage vessel and the edge of the internal floating roof, or a mechanical shoe seal.
  - (3) Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.
  - (4) Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e.; no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.
  - (5) Automatic bleeder vents shall be equipped with a gasket and are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.
  - (6) Rim space vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.
  - (7) Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.
  - (8) Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.
  - (9) Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.
- (b) Pursuant to 40 CFR 60.113b(a), the Permittee shall:
- (1) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to the filling of the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the Permittee shall repair the items before filling the storage vessel.
  - (2) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the Permittee shall repair the items or empty and remove the storage vessel from service within 45 days. If a failure that is detected in this paragraph cannot be repaired

within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from the Administrator in the inspection report required in 40 CFR 60.115b(a)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions that the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.

- (3) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), gaskets, slotted membranes, and sleeve seals (if any) each time the storage vessel is emptied or degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the Permittee shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years.
  - (4) Notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by paragraph (A) and (C) of this section to afford the Administrator the opportunity to have an observer present. If the inspection required by (C) of this section is not planned and the Permittee could not have known about the inspection 30 days in advance of refilling the tank, the Permittee shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to refilling.
- (c) Pursuant to 40 CFR 60.115b(a), the Permittee shall:
- (1) Keep a record of each inspection performed. Each record shall identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed conditions of each component of the control equipment (seals, internal floating roof, and fittings).
  - (2) If any of the conditions described in 40 CFR 60.113(a)(2) are detected during the annual visual inspection required by 40 CFR 60.113(a)(2), a report shall be furnished to the administrator within 30 days of the inspection. Each report shall identify the storage vessel, the nature of the defects, and the date the storage vessel was emptied or the nature of and date the repair was made.
- (d) Pursuant to 40 CFR 60.116b, the Permittee shall maintain records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel, the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period.

#### **40 CFR 61 - National Emission Standards for Hazardous Air Pollutants - NESHAPS**

National Emission Standards for Hazardous Air Pollutants, 326 IAC 14, (40 CFR 61.300, Subpart BB: National Emission Standard for Benzene Emissions From Benzene Transfer Operations)

This source is not subject to the requirements of 40 CFR 61, Subpart BB (National Emission Standard for Benzene Emissions from Benzene Transfer Operations) because loading racks loading distillates are exempted. The Tank Truck Loading Facility is also exempted because both of the products loaded (distillates and denatured ethanol) contain less than seventy weight percent (70%) benzene.

#### **40 CFR 63 - National Emission Standards for Hazardous Air Pollutants - NESHAPS**

##### 326 IAC 20, (40 CFR Part 63.420, Subpart R, National Emission Standards for Gasoline Terminals and Pipeline Breakout Stations)

This source is not subject to the requirements for Hazardous Air Pollutants, 326 IAC 20, (40 CFR Part 63.420, Subpart R) because it is not a Major Source as defined in 40 CFR 63.2, Subpart A. This source is not a stationary source that has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

#### **40 CFR 64 - Compliance Assurance Monitoring**

This source is not subject to the provisions of 40 CFR 64, Compliance Assurance Monitoring (CAM). In order for this rule to apply, a specific emissions unit must meet three criteria for a given pollutant: 1) the unit is subject to an emission limitation or standard for the applicable regulated air pollutant, 2) the unit uses a control device to achieve compliance with any such emission limitation or standard, and, 3) the unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than one hundred (100) percent of the amount required for a source to be classified as a major source. There are no emission units at this source subject to a federal emission limit or standard. Also, there are no control devices at this source.

#### **State Rule Applicability - Entire Source**

##### 326 IAC 1-5-2 (Emergency Reduction Plans)

The source submitted an Emergency Reduction Plan (ERP) on January 18, 1991. The ERP has been verified to fulfill the requirements of 326 IAC 1-5-2 (Emergency Reduction Plans).

##### 326 IAC 1-6-3 (Preventive Maintenance Plan)

The source has submitted a Preventive Maintenance Plan (PMP) on September 24, 1997. This PMP has been verified to fulfill the requirements of 326 IAC 1-6-3 (Preventive Maintenance Plan).

##### 326 IAC 1-6 (Malfunction)

This rule requires that a record be kept of all malfunctions, including startups or shutdowns of any facility or emission control equipment which result in violations of applicable air pollution control regulations or applicable emission limitations and such records shall be retained for a period of three (3) years and shall be made available to the commissioner upon request. When a malfunction of any facility or emission control equipment occurs which lasts more than one (1) hour, said condition shall be reported to the commissioner or his appointed representative. The source shall record all the malfunctions that result in violation of applicable requirements and limitations. These records shall be retained for three years. If a malfunction lasts more than one hour, the condition shall be reported to the IDEM, OAQ and HDEM per requirements in 326 IAC 1-6-2.

##### 326 IAC 2-2 (PSD Requirements)

This source was initially constructed in 1926. The source does not have the potential to emit any regulated pollutant, for which Lake County is currently classified as being in attainment, at a level in excess of the major source thresholds. The source is, however, a major source for the purpose of PSD because it is one of the 28 listed source categories. The source has not been reviewed under the requirements of 326 IAC 2-2 because it was in existence prior to the finalization of the rule and there has not been a major modification, as defined in this rule, subject to the requirements of 326 IAC 2-2.

##### 326 IAC 2-3 (Emission Offset)

This source, built in 1926, is a major stationary source for the purpose of Emission Offset because it has the potential to emit VOCs at a rate of 25 TPY or more and it is located in Lake County which is classified as nonattainment for VOCs. The source has not been reviewed under the requirements of 326 IAC 2-3 because it was in existence prior to the finalization of the rule and there has not been a major modification, as defined in this rule, subject to the requirements of 326 IAC 2-3.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants)

This source is not subject to the requirements of 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants) because no major sources of HAPs were constructed or reconstructed after July 27, 1997.

326 IAC 2-6 (Emissions Reporting)

Since this source is required to have an operating permit under 326 IAC 2-7, Part 70 Permit Program, this source is subject to 326 IAC 2-6 (Emission Reporting). In accordance with the compliance schedule in 326 IAC 2-6-3, an emission statement must be submitted triennially by July 1 beginning in 2007 and every 3 years after. This source which is located in Lake County also has potential to emit greater than or equal to 25 tons of VOC; therefore, an emission statement covering the previous calendar year must be submitted by July 1 of any year that the source is not already required to submit a statement if the source emits VOC into the ambient air at levels equal to or greater than 25 tpy. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4.

326 IAC 5-1 (Opacity Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in the permit:

- (a) Opacity shall not exceed an average of twenty percent (20%) in any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 6-1 (Particulate Matter and PM10 Emissions Limitations)

This source is located in a particulate matter non-attainment area of Lake County, however, no facilities are specifically listed in 326 IAC 6-1-10.1. In addition, this source does not have the potential to emit one hundred (100) tons or more of particulate matter per year or have actual emissions of ten (10) tons or more of particulate matter per year. Therefore, pursuant to 326 IAC 6-1-1, the requirements of this rule do not apply.

326 IAC 6-1-11.1 (Lake County Fugitive Particulate Matter)

This source is not subject to 326 IAC 6-1-11.1 for fugitive dust control requirements because they do not have facilities or operations that have the potential to emit five (5) tons per year of fugitive particulate matter into the atmosphere in Lake County.

326 IAC 6-4 (Fugitive Dust Emissions)

This source is subject to 326 IAC 6-4 because it is a source of fugitive dust. Pursuant to this rule, fugitive particulate matter emissions shall not be visible crossing the property lines. No violations of this rule have been observed at this source.

326 IAC 6-5 (Fugitive Particulate Matter Emission Limitations)

This source is not subject to 326 IAC 6-5 because it does not have potential fugitive particulate emissions of twenty-five (25) tons per year or more and it is not a new source of fugitive particulate matter constructed after December 13, 1985.

326 IAC 8-4-2 (Petroleum Sources - Petroleum Refineries)

326 IAC 8-4-2 (Petroleum Sources - Petroleum Refineries) does not apply to this source because this source is not a petroleum refinery. This source just stores petroleum compounds.

326 IAC 8-4-4 (Bulk Gasoline Terminals)

The source is not subject to this rule because it does not fit the definition of a bulk gasoline terminal found in 326 IAC 1-2-8. The source does receive gasoline by pipeline but it does not deliver gasoline to bulk gasoline plants or to commercial or retail accounts primarily by transport.



326 IAC 8-4-5 (Petroleum Sources - Bulk Gasoline Plants)

326 IAC 8-4-5 (Petroleum Sources - Bulk Gasoline Plants) does not apply to this source even though it is located in Lake County which is listed in the applicability of this rule because this source is not a bulk gasoline plant. This source just stores petroleum compounds.

326 IAC 8-4-6 (Gasoline Dispensing Facilities)

326 IAC 8-4-6 (Gasoline Dispensing Facilities) does not apply to this source even though it is located in Lake County which is listed in the applicability of this rule because this source does not dispense gasoline into motor vehicle fuel tanks or portable containers. This source dispenses gasoline into trucks which transport the gasoline to various gasoline dispensing facilities.

326 IAC 8-4-7 (Petroleum Sources - Gasoline Transports)

326 IAC 8-4-7 (Petroleum Sources - Gasoline Transports) does not apply to this source even though the source is in Lake County which is listed in the applicability of this rule because this source does not transport gasoline. This source just stores petroleum compounds.

326 IAC 8-4-8 (Petroleum Sources - Leaks from Petroleum Refineries; Monitoring; Reports)

326 IAC 8-4-8 (Petroleum Sources - Leaks from Petroleum Refineries; Monitoring; Reports) does not apply to this source even though the source is in Lake County which is listed in the applicability of this rule because this source is not a Petroleum Refinery. This source just stores petroleum compounds.

326 IAC 8-7 (Specific VOC Reduction Requirements for Lake, Porter, Clark, and Floyd Counties)

This rule applies to stationary sources located in Lake, Porter, Clark, or Floyd County that emit or have the potential to emit volatile organic compounds (VOCs) at levels equal to or greater than twenty-five (25) tons per year (tpy) in Lake County. In accordance with 326 IAC 8-7-2(a)(3)(C) and (Q), volatile organic liquid storage facilities, are not "affected facilities" and should not be considered in determining the applicability to this rule. With the storage tanks excluded, VOC emissions from the source are less than 25 tons per year, therefore, this source is not subject to the requirements of this rule.

**State Rule Applicability - Individual Facilities**

326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations)

The source is not subject to 326 IAC 7-1.1 because none of the facilities have the potential to emit twenty-five (25) tons per year or ten (10) pounds per hour of sulfur dioxide. Therefore, pursuant to 326 IAC 7-1.1-1, the requirements of 326 IAC 7-1.1 and 7.2 do not apply.

326 IAC 8-1-6 (New Facilities; General Reduction Requirements)

This rule applies to facilities located anywhere in the state that were constructed on or after January 1, 1980, and which have potential volatile organic compound (VOC) emissions of 25 tons per year or more. This source is not subject to 326 IAC 8-1-6 because none of the facilities constructed after January 1, 1980 have potential VOC emissions of 25 tons per year or more.

**Tank Truck Loading Facility**

326 IAC 8-4-9 (Petroleum Sources - Leaks from Transports and Vapor Collection Systems; Records)

This facility is not subject to this rule because it is not subject to sections 4 through 7 of 326 IAC 8-4.

**Storage Tanks**

326 IAC 8-4-3 (Petroleum Liquid Storage Facilities)

- (a) 326 IAC 8-4-3 does not apply to tanks D-08B, D-08G, D-13S, D-21, D-51, D-52, D-57, D-74, D-75, and D-84 even though they are located in Lake County, which is listed in the applicability of this rule, and have capacities greater than thirty-nine thousand (39,000) gallons because the true vapor pressure of the volatile organic compounds stored in these tanks is less than 1.52 psia.

- (b) 326 IAC 8-4-3 applies to tanks D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92 because these tanks are located in Lake County which is listed in the applicability of this rule, have capacities greater than thirty-nine thousand (39,000) gallons, and store volatile organic compounds with true vapor pressures greater than 1.52 psia. All of the aforementioned tanks are internal floating roof tanks and are, therefore, subject to 326 IAC 8-4-3(b). Pursuant to 326 IAC 8-4-3(b), no owner or operator of an affected fixed roof tank shall permit the use of such facility unless:
- (1) The facility has been retrofitted with an internal floating roof equipped with a closure seal, or seals, to close the space between the roof edge and tank wall unless the source has been retrofitted with equally effective alternative control which has been approved.
  - (2) The facility is maintained such that there are no visible holes, tears, or other openings in the seal or any seal fabric or materials.
  - (3) All openings, except stub drains, are equipped with covers, lids, or seals such that:
    - (A) The cover, lid, or seal is in the closed position at all times except when in actual use;
    - (B) Automatic bleeder vents are closed at all times except when the roof is floated off or landed on the roof leg supports;
    - (C) Rim vents, if provided, are set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.

326 IAC 8-9 (Volatile Organic Liquid Storage Vessels)

- (a) 326 IAC 8-9 does not apply to tank D-1 even though it is located in Lake County which is listed in the applicability of this rule because 326 IAC 8-9-2 exempts tanks that are subject to 40 CFR 60, Subpart Kb.
- (b) Because the maximum true vapor pressure of the VOL stored in the tanks D-08B, D-08G, D-13S, D-21, D-51, D-52, D-57, D-74, D-75, D-80, D-83, and D-84 is less than seventy-five hundredths (0.75), these tanks are not required to meet the standards in 326 IAC 8-9-4. Pursuant to 326 IAC 8-9-6(h), a record of the maximum true vapor pressure of the liquid in storage tanks D-08B, D-08G, D-13S, D-21, D-51, D-52, D-57, D-74, D-75, D-80, D-83, and D-84 shall be maintained and the department shall be notified within thirty (30) days of when the maximum true vapor pressure of the liquid exceeds seventy-five hundredths (0.75) psia.
- (c) 326 IAC 8-9 applies to tanks D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-85, D-89, D-91, and D-92 because they are located in Lake County, store volatile organic liquid and have capacities in excess of thirty-nine thousand (39,000) gallons. The source has chosen to comply with 326 IAC 8-9-4(a) by installing an internal floating roof meeting the standards in 326 IAC 8-9-4(c). 326 IAC 8-9-4(d) and (e) are not applicable because they apply to tanks equipped with closed vent systems and external floating roofs, respectively. 326 IAC 326 IAC 8-9-4(b) is not applicable to these tanks because the maximum true vapor pressure of the VOL stored in these tanks is less than eleven and one-tenth (11.1) psia. Pursuant to 326 IAC 8-9-4(c), these tanks shall be equipped with a fixed roof in combination with an internal floating roof meeting the following:
- (1) The internal floating roof shall float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof.
  - (2) The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage tank is completely emptied and refilled.
  - (3) When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.
  - (4) Each internal floating roof shall be equipped with one (1) of the following closure devices between the wall of the vessel and the edge of the internal floating roof:

- (A) A foam or liquid-filled seal mounted in contact with the liquid (liquid-mounted seal).
  - (B) Two (2) seals mounted one (1) above the other so that each forms a continuous closure that completely covers the space between the wall of the vessel and the edge of the internal floating roof. The lower seal may be vapor-mounted, but both must be continuous.
  - (C) A mechanical shoe seal that consists of a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric, or envelope, spans the annular space between the metal sheet and the floating roof.
- (5) Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.
  - (6) Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e.; no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.
  - (7) Automatic bleeder vents shall be equipped with a gasket and are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.
  - (8) Rim space vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.
  - (9) Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.
  - (10) Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.
- (d) Pursuant to 326 IAC 8-9-4(b) or 40 CFR 60.112b(b), tanks D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92 shall not store a volatile organic liquid (VOL) with a vapor pressure greater than or equal to eleven and one-tenth (11.1) psia as stored.

326 IAC 12 (New Source Performance Standards)

Tanks D-80 and D-83 are subject to 40 CFR 60, Subpart Kb as the rule existed prior to October of 2003 because they have storage capacities greater than forty (40) cubic meters. Although EPA revised the applicability criteria for Subpart Kb in October of 2003, the previous version of Subpart Kb is still applicable to sources in Indiana pursuant to 326 IAC 12 and 326 IAC 1-1-3. Once the revised version of Subpart Kb is incorporated into the IAC, these storage tanks will no longer be subject to the record keeping requirements in 40 CFR 60.116(a) and (b) because the tanks have capacities greater than 151 cubic meters and are used to store liquids with a maximum vapor pressure less than 3.5 kPa. Tanks D-80 and D-83 will, however, still be subject to the record keeping requirements in 326 IAC 8-9-6.

**Local Rule Applicability - Individual Facilities**

**Tank Truck Loading Facility**

Hammond Ordinance No. 3522 (as amended)

- (a) Pursuant to the Hammond Air Quality Control Ordinance No. 3522 (as amended), the VOC emissions from the Tank Truck Loading Facility shall be limited to 1.546 lbs/hr; 6.77 TPY.
- (b) Pursuant to the Hammond Air Quality Control Ordinance No. 3522 (as amended), the HAPs emissions from the Tank Truck Loading Facility shall be limited to 0.132 lbs/hr; 0.577 TPY.

### **Water Treatment System**

#### **Hammond Ordinance No. 3522 (as amended)**

Pursuant to Construction Permit No. 369 and Operation Permit No. 00722, the total VOC emissions from the Air Stripper shall be limited to 2.469 lbs/hr and 10.814 TPY.

### **Testing Requirements**

There are no testing requirements for this source.

### **Compliance Requirements**

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also Section D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

The compliance monitoring requirements applicable to this source are as follows:

#### **Tank Truck Loading Facility**

The loading rack has applicable compliance monitoring conditions as specified below:

- (a) Only denatured ethanol and distillate having a Reid vapor pressure less than twenty-seven and six-tenths (27.6) kilopascals may be loaded at the Tank Truck Loading Facility.
- (b) Prior to loading liquid product into any tank truck, the Permittee shall determine the type of material contained in the tank truck during its immediately previous load. The Permittee shall not load liquid product into any tank truck which contained gasoline on its immediately previous load.
- (c) Records of the type, amount, and the maximum true vapor pressure of the distillates and denatured ethanol loaded on a daily basis shall be maintained for a minimum of 2 years and made available upon request by IDEM-OAQ or HDEM.
- (d) The Permittee shall obtain a certification from the driver of each tank truck loaded. The certification shall include the following information: date, time, product being loaded, product loaded on the immediately previous shipment, name of the trucking firm or owner, phone number of the trucking firm or owner, printed name of the driver, and signature of the driver attesting to the accuracy of the information provided. The certifications shall be maintained for a minimum of 2 years and made available upon request by IDEM-OAQ or HDEM.

These monitoring conditions are necessary to ensure compliance with 326 IAC 12, (NSPS Subpart XX).

### Water Treatment System

The Water Treatment System is subject to the requirements of the Construction Permit (No. 369) and Operation Permit (No. 00722) previously issued for this facility. The following monitoring requirements are required.

- (a) The influent and effluent of the air stripper shall be sampled for total VOC and Benzene once per quarter. The results from this sampling shall be submitted to the Hammond Department of Environmental Management for review within thirty (30) days after the end of the quarter being reported.
- (b) The following process operating records shall be maintained:
  - 1) Volume (in gallons) of contaminated water processed through the Air Stripper per day.
  - 2) Operating hours of the Air Stripper per day.

These monitoring conditions are necessary to ensure compliance with 326 IAC 2-1 and 326 IAC 2-7 (Part 70).

### Storage Tank Nos. D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92:

Tanks D-1, D-08F, D-12S, D-41, D-50, D-55, D-72, D-73, D-80, D-83, D-85, D-89, D-91, and D-92 have applicable compliance monitoring conditions as specified below:

- (a) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to the filling of the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the Permittee shall repair the items before filling the storage vessel.
- (b) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the Permittee shall repair the items or empty and remove the storage vessel from service within 45 days. If a failure that is detected in this paragraph cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from HDEM in the inspection report required in 40 CFR 60.115b(a)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions that the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.
- (c) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), gaskets, slotted membranes, and sleeve seals (if any) each time the storage vessel is emptied or degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the Permittee shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years.
- (d) Notify HDEM in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by paragraph (a) and (c) of this section to afford HDEM the opportunity to have an observer present. If the inspection required by (c) of this section is not planned and the Permittee could not have known about the inspection 30 days in advance of refilling the tank, the Permittee shall notify HDEM at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the HDEM at least 7 days prior to refilling.

These monitoring conditions are necessary because the tanks must be in good condition to ensure compliance with 326 IAC 8-9-5(b), 326 IAC 12, 326 IAC 2-7 (Part 70), and 40 CFR 60.110b, Subpart Kb.

### **Conclusion**

The operation of this Petroleum Bulk Terminal Operation shall be subject to the conditions of the attached proposed **Part 70 Permit Renewal No. T089-15666-00239**.

Hammond Department of Environmental Management

Emissions Calculations

Buckeye Terminals, LLC

Calc: T. Nyhan, 9/14/04

Tank #	Type	Product	Capacity (gallons)	Thruput (gallons)	Emissions Standing* (TPY)	Emissions Working* (TPY)	Emissions Total (TPY)
D-1	IF	Gasoline	7,560,000	102,928,050	16.678	0.054	16.732
D-08B	FC	Distillate	3,360,000	43,664,700	0.495	0.322	0.817
D-08F	IF	Gasoline	3,360,000	45,837,292	10.222	0.034	10.256
D-08G	IF	Distillate	3,120,600	45,837,292	0.495	0.338	0.833
D-12S	IF	Gasoline	3,360,000	45,974,529	7.532	0.034	7.566
D-13S	IF	Distillate	3,141,600	45,837,292	0.495	0.338	0.833
D-21	FC	Distillate	840,000	8,714,737	0.136	0.064	0.200
D-41	IF	Gasoline	840,000	1,284,468	4.577	0.002	4.579
D-50	IF	Gasoline	3,360,000	46,935,191	10.086	0.035	10.121
D-51	FC	Distillate	840,000	5,177,800	0.136	0.038	0.174
D-52	FC	Distillate	840,000	11,277,638	0.136	0.083	0.219
D-55	IF	Gasoline	840,000	1,284,468	5.552	0.002	5.554
D-57	FC	Distillate	840,000	9,141,002	0.136	0.067	0.203
D-72	IF	Gasoline	3,360,000	33,840,900	10.162	0.025	10.187
D-73	IF	Gasoline	3,360,000	48,719,277	10.162	0.036	10.198
D-74	FC	Distillate	840,000	9,235,727	0.136	0.068	0.204
D-75	FC	Distillate	840,000	9,235,727	0.136	0.068	0.204
D-80	IF	Gasoline	3,360,000	49,748,558	10.132	0.037	10.169
D-83	IF	Gasoline	3,360,000	52,356,068	10.132	0.039	10.171
D-84	FC	Distillate	3,360,000	41,582,674	0.495	0.307	0.802
D-85	IF	Gasoline	3,360,000	42,955,306	10.132	0.032	10.164
D-89	IF	Gasoline	840,000	1,284,468	4.643	0.002	4.644
D-91	IF	Gasoline	210,000	2,757,616	2.929	0.008	2.936
D-92	IF	Gasoline	210,000	2,757,616	2.929	0.008	2.936
<b>Total</b>							<b>120.702</b>

Load Racks

	Control Device	Gallons Loaded (mgal)	EF/1000	Emissions Before Controls (TPY)	Control Efficiency (%)	Actual Emissions (TPY)
Ethanol Loading	None	6,400	0.877	2.806	0	2.806
Distillate Loading	None	51,847	0.019	0.493	0	0.493
<b>Total</b>				<b>3.299</b>		<b>3.299</b>

Fugitives from valves, flanges, pumps, etc. (taken from 2003 emission statement)

1.644

Air Stripper

Throughput (mgal)	VOC Concentration (ppm)	Emissions (TPY)
894	38	0.14149338

<b>Buckeye Total</b>	<b>125.787</b>	<b>125.787</b>
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	Vapor Weight Percent Gasoline	Vapor Weight Percent Distillate	Emissions Before Controls (TPY)	Actual Emissions (TPY)
HAPs				
Benzene	0.3057	0.1000	0.37	0.37
Ethylbenzene	0.0266	0.1100	0.04	0.04
Hexane	0.5515	0.0200	0.65	0.65
2,2,4-Trimethylpentane	0.6050	0.0000	0.71	0.71
Toluene	0.4185	1.0500	0.55	0.55
Xylene	0.1859	0.6700	0.25	0.25
MTBE	1.5835	0.0000	1.87	1.87
1,2,4-Trimethylbenzene	0.0054	0.0700	0.01	0.01
Cumene	0.0015	0.0500	0.00	0.00
Naphthalene	0.0001	0.0200	0.00	0.00
<b>Total</b>	<b>3.6837</b>	<b>2.0900</b>	<b>4.45</b>	<b>4.45</b>

\* See attached calculations.

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # .....	<b>D-1</b>	
Tank Shell Diameter.....	164	feet
Tank Shell Height.....	48	feet
*Tank Shell Type (Welded or Riveted).....	Welded	
*Tank Deck Type (Welded or Bolted).....	Bolted	
*Tank Rim Seal Type.....	Double Wiper	
Tank Capacity (max liquid).....	7,560,000	gallons

**Product Information: \*\***

Product Stored.....	<b>Gasoline</b>	
Vapor Molecular Weight.....	62.00	lb/lb-mole
True Vapor Pressure @ 60° F.....	5.7260	psia - @ 60° F
Average Organic Liquid Density.....	4.90	lb/gal
Annual Product Throughput.....	<b>102,928,050</b>	gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	4.181	Tons/yr
Lwd =	Withdrawal Loss =	0.054	Tons/yr
Lf =	Deck Fitting Losses =	5.537	Tons/yr
Ld =	Deck Seam Loss =	6.960	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>16.732</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft•yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	164 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)\*(D)\*(Mv)\*(Kc) = 8362.877 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	2450668 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	164 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 107.361 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	0	1.6	0
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	1	25	25
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	0	5.1	0
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	1	28	28
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	0	33	0
Builtup Column - Sliding Cover, Ungasketed.....	16	47	752

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	0	56	0
Sliding Cover, Ungasketed.....	1	76	76

**Roof Leg or Hanger Well:**

Adjustable.....	67	7.9	529.3
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 1455**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 1455 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 11073.886 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 13919.821 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-08B**  
Tank Shell Diameter..... 117 feet  
Tank Shell Height..... 42 feet  
Tank Capacity (max liquid)..... 3,360,000 gallons

**Product Information:**

Product Stored..... Distillate  
\*Vapor Molecular Weight..... 130.0 lb/lb-mole  
\*True Vapor Pressure @ 60° F..... 0.0056 psia - @ 60° F  
\*True Vapor Pressure @ 40° F..... 0.0040 psia - @ 40° F  
Annual Product Throughput..... **43,664,700** gallons/yr  
Average Annual Liquid Height..... 21 feet  
(If unknown, use half of tank shell height.)

\*This product information available in the AP-42, Section 7.

\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses = 0.4950 Tons/yr  
Lw = Working Losses = 0.3221 Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.8171</b>	<b>Tons/yr</b>
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See AP-42, Section 7, for clarification of the following calculations:

$$L_s = \text{Standing Storage Losses} = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\begin{aligned} H_r &= \text{tank roof height} = S_r \cdot R_s = 0.0625 \cdot (D/2) = & 48.000 \text{ feet} \\ H_{ro} &= \text{roof outage} = H_r/3 = & 16.000 \text{ feet} \\ H_l &= \text{liquid height (1/2 tank height if unknown)} = & 21.000 \text{ feet} \\ H_s &= \text{tank shell height} = & 42.000 \text{ feet} \\ H_{vo} &= \text{vapor space outage} = H_s - H_l + H_{ro} = & 37.000 \text{ feet} \\ D &= \text{tank diameter} = & 117.000 \text{ feet} \end{aligned}$$

$$V_v = \text{Tank Vapor Space Volume} = (\pi/4) \cdot (D^2) \cdot (H_{vo}) = \underline{397798.672 \text{ cft}}$$

$$\begin{aligned} M_v &= \text{vapor molecular weight (Tables 7.1-2 \& 3)} & 130.0 \text{ lb/lb-mole} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia @ } 50\text{-}60^\circ\text{F} \\ T_{La} &= \text{daily average liquid surface temperature}^\circ\text{R} & 510.510 \\ &\text{as calculated for Chicago area using AP-42, Section 7} \end{aligned}$$

$$W_v = \text{Vapor Density} = (M_v \cdot P_{va}) / (10.731 \cdot T_{La}) = \underline{0.0001131 \text{ lb/cft}}$$

$$\begin{aligned} \Delta T_a &= \text{daily ambient temp range (Chgo area)} = & 19.00 \text{ }^\circ\text{R} \\ \partial &= \text{tank paint solar absorptance (Table 7.1-7)} = & 0.54 \text{ dimensionless} \end{aligned}$$

\*(this factor ( $\partial$ ) will change for non-white tanks)

$$\begin{aligned} I &= \text{daily total solar insolation factor (Chgo)} = & 1215 \text{ Btu/sqft} \cdot \text{day} \\ \Delta T_v &= \text{daily vapor temp range} = \\ &= 0.72 \cdot (\Delta T_a) + 0.028 \cdot (\partial) \cdot (I) = & 32.0508 \text{ }^\circ\text{R} \\ T_{La} &= \text{daily average liquid surface temp }^\circ\text{R} & 510.510 \\ \Delta P_v &= \text{daily vpr pres range} = P_{v@60} - P_{v@40} = & 0.0016 \text{ psia} \\ \Delta P_b &= \text{breather vent pressure setting range} = & 0.03 \text{ psig} \\ P_a &= \text{atmospheric pressure} = & 14.7 \text{ psia} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia} \end{aligned}$$

$$K_e = \text{Vapor Space Expansion Factor} =$$

$$(\Delta T_v / T_{La}) + (\Delta P_v - \Delta P_b) / (P_a - P_{va}) = \underline{0.060849 \text{ dimensionless}}$$

$$K_s = \text{Vented Vapor Saturation Factor} =$$

$$1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo}) = \underline{0.990740 \text{ dimensionless}}$$

$$L_s = \text{Standing Storage Losses, lb/yr}$$

$$L_s = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$L_s = \underline{989.976 \text{ lb/yr}}$$

See AP-42, Section 7, for clarification of the following calculations:

$$Lw = \text{Working Losses} = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

Q = annual net thruput, bbl/yr - (42 gal/bbl) =	1,039,635.7 bbl/yr
VLx = tank max liquid volume - (7.481 gal/cft)	449,137.8 cft
N = # of turnovers per year = $5.614 * Q / VLx$ =	13.0 dimensionless
Kn = turnover factor, =1 unless N>36	1.0000 dimensionless
Kp = working loss product factor =	1.00 dimensionless

**\* Kp = 0.75 for crude oils,  
1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$Lw = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

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$$Lw = 644.137 \text{ lb/yr}$$

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # .....	<b>D-08F</b>	
Tank Shell Diameter.....	117	feet
Tank Shell Height.....	42	feet
*Tank Shell Type (Welded or Riveted).....	Welded	
*Tank Deck Type (Welded or Bolted).....	Bolted	
*Tank Rim Seal Type.....	Liquid Mounted	
Tank Capacity (max liquid).....	3,360,000	gallons

**Product Information: \*\***

Product Stored.....	<b>Gasoline</b>	
Vapor Molecular Weight.....	62.00	lb/lb-mole
True Vapor Pressure @ 60° F.....	5.7260	psia - @ 60° F
Average Organic Liquid Density.....	4.90	lb/gal
Annual Product Throughput.....	45,837,292	gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	2.983	Tons/yr
Lwd =	Withdrawal Loss =	0.034	Tons/yr
Lf =	Deck Fitting Losses =	3.697	Tons/yr
Ld =	Deck Seam Loss =	3.542	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>10.256</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft <sup>2</sup> •yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	117 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)(D)\*(Mv)\*(Kc) = 5966.199 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	1091364 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	117 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 67.968 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	16	33	528
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	0	56	0
Sliding Cover, Ungasketed.....	1	76	76

**Roof Leg or Hanger Well:**

Adjustable.....	40	7.9	316
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 971.4**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 971.4 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 7393.246 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 7084.638 lb/yr**

Tanks with welded decks do not have deck seam losses

The End



**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-08G**  
Tank Shell Diameter..... 117 feet  
Tank Shell Height..... 42 feet  
Tank Capacity (max liquid)..... 3,120,600 gallons

**Product Information:**

Product Stored..... Distillate  
\*Vapor Molecular Weight..... 130.0 lb/lb-mole  
\*True Vapor Pressure @ 60° F..... 0.0056 psia - @ 60° F  
\*True Vapor Pressure @ 40° F..... 0.0040 psia - @ 40° F  
Annual Product Throughput..... **45,837,292** gallons/yr  
Average Annual Liquid Height..... 21 feet  
(If unknown, use half of tank shell height.)

\*This product information available in the AP-42, Section 7.

\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses = 0.4950 Tons/yr  
Lw = Working Losses = 0.3381 Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.8331</b>	<b>Tons/yr</b>
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See AP-42, Section 7, for clarification of the following calculations:

$$L_s = \text{Standing Storage Losses} = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\begin{aligned} H_r &= \text{tank roof height} = S_r \cdot R_s = 0.0625 \cdot (D/2) = & 48.000 \text{ feet} \\ H_{ro} &= \text{roof outage} = H_r/3 = & 16.000 \text{ feet} \\ H_l &= \text{liquid height (1/2 tank height if unknown)} = & 21.000 \text{ feet} \\ H_s &= \text{tank shell height} = & 42.000 \text{ feet} \\ H_{vo} &= \text{vapor space outage} = H_s - H_l + H_{ro} = & 37.000 \text{ feet} \\ D &= \text{tank diameter} = & 117.000 \text{ feet} \end{aligned}$$

$$V_v = \text{Tank Vapor Space Volume} = (\pi/4) \cdot (D^2) \cdot (H_{vo}) = \underline{397798.672 \text{ cft}}$$

$$\begin{aligned} M_v &= \text{vapor molecular weight (Tables 7.1-2 \& 3)} & 130.0 \text{ lb/lb-mole} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia @ } 50\text{-}60^\circ\text{F} \\ T_{La} &= \text{daily average liquid surface temperature}^\circ\text{R} & 510.510^\circ\text{R} \\ &\text{as calculated for Chicago area using AP-42, Section 7} \end{aligned}$$

$$W_v = \text{Vapor Density} = (M_v \cdot P_{va}) / (10.731 \cdot T_{La}) = \underline{0.0001131 \text{ lb/cft}}$$

$$\begin{aligned} \Delta T_a &= \text{daily ambient temp range (Chgo area)} = & 19.00^\circ\text{R} \\ \partial &= \text{tank paint solar absorptance (Table 7.1-7)} = & 0.54 \text{ dimensionless} \end{aligned}$$

\*(this factor ( $\partial$ ) will change for non-white tanks)

$$\begin{aligned} I &= \text{daily total solar insolation factor (Chgo)} = & 1215 \text{ Btu/sqft} \cdot \text{day} \\ \Delta T_v &= \text{daily vapor temp range} = \\ &= 0.72 \cdot (\Delta T_a) + 0.028 \cdot (\partial) \cdot (I) = & 32.0508^\circ\text{R} \\ T_{La} &= \text{daily average liquid surface temp }^\circ\text{R} & 510.510^\circ\text{R} \\ \Delta P_v &= \text{daily vpr pres range} = P_{v@60} - P_{v@40} = & 0.0016 \text{ psia} \\ \Delta P_b &= \text{breather vent pressure setting range} = & 0.03 \text{ psig} \\ P_a &= \text{atmospheric pressure} = & 14.7 \text{ psia} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia} \end{aligned}$$

$$K_e = \text{Vapor Space Expansion Factor} =$$

$$(\Delta T_v / T_{La}) + (\Delta P_v - \Delta P_b) / (P_a - P_{va}) = \underline{0.060849 \text{ dimensionless}}$$

$$K_s = \text{Vented Vapor Saturation Factor} =$$

$$1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo}) = \underline{0.990740 \text{ dimensionless}}$$

$$L_s = \text{Standing Storage Losses, lb/yr}$$

$$L_s = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$L_s = \underline{989.976 \text{ lb/yr}}$$

See AP-42, Section 7, for clarification of the following calculations:

$$Lw = \text{Working Losses} = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

Q = annual net thruput, bbl/yr - (42 gal/bbl) =	1,091,364.1 bbl/yr
VLx = tank max liquid volume - (7.481 gal/cft)	417,136.7 cft
N = # of turnovers per year = $5.614 * Q / VLx$ =	14.7 dimensionless
Kn = turnover factor, =1 unless N>36	1.0000 dimensionless
Kp = working loss product factor =	1.00 dimensionless

**\* Kp = 0.75 for crude oils,  
1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$Lw = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

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$$Lw = 676.187 \text{ lb/yr}$$

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # .....	<b>D-12S</b>	
Tank Shell Diameter.....	117	feet
Tank Shell Height.....	42	feet
*Tank Shell Type (Welded or Riveted).....	Welded	
*Tank Deck Type (Welded or Bolted).....	Welded	
*Tank Rim Seal Type.....	Liquid mounted	
Tank Capacity (max liquid).....	3,360,000	gallons

**Product Information: \*\***

Product Stored.....	<b>Gasoline</b>	
Vapor Molecular Weight.....	62.00	lb/lb-mole
True Vapor Pressure @ 60° F.....	5.7260	psia - @ 60° F
Average Organic Liquid Density.....	4.90	lb/gal
Annual Product Throughput.....	45,974,529	gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	2.983	Tons/yr
Lwd =	Withdrawal Loss =	0.034	Tons/yr
Lf =	Deck Fitting Losses =	4.549	Tons/yr
Ld =	Deck Seam Loss =	0.000	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>7.566</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft <sup>2</sup> •yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	117 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)(D)\*(Mv)\*(Kc) = 5966.199 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	1094632 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	117 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 68.171 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	0	33	0
Builtup Column - Sliding Cover, Ungasketed.....	16	47	752

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	0	56	0
Sliding Cover, Ungasketed.....	1	76	76

**Roof Leg or Hanger Well:**

Adjustable.....	40	7.9	316
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 1195.4**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 1195.4 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 9098.092 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.00 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 0.000 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-13S**  
Tank Shell Diameter..... 117 feet  
Tank Shell Height..... 42 feet  
Tank Capacity (max liquid)..... 3,141,600 gallons

**Product Information:**

Product Stored..... Distillate  
\*Vapor Molecular Weight..... 130.0 lb/lb-mole  
\*True Vapor Pressure @ 60° F..... 0.0056 psia - @ 60° F  
\*True Vapor Pressure @ 40° F..... 0.0040 psia - @ 40° F  
Annual Product Throughput..... **45,837,292** gallons/yr  
Average Annual Liquid Height..... 21 feet  
(If unknown, use half of tank shell height.)

\*This product information available in the AP-42, Section 7.  
\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses = 0.4950 Tons/yr  
Lw = Working Losses = 0.3381 Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.8331</b>	<b>Tons/yr</b>
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See AP-42, Section 7, for clarification of the following calculations:

$$L_s = \text{Standing Storage Losses} = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\begin{aligned} H_r &= \text{tank roof height} = S_r \cdot R_s = 0.0625 \cdot (D/2) = & 48.000 \text{ feet} \\ H_{ro} &= \text{roof outage} = H_r/3 = & 16.000 \text{ feet} \\ H_l &= \text{liquid height (1/2 tank height if unknown)} = & 21.000 \text{ feet} \\ H_s &= \text{tank shell height} = & 42.000 \text{ feet} \\ H_{vo} &= \text{vapor space outage} = H_s - H_l + H_{ro} = & 37.000 \text{ feet} \\ D &= \text{tank diameter} = & 117.000 \text{ feet} \end{aligned}$$

$$V_v = \text{Tank Vapor Space Volume} = (\pi/4) \cdot (D^2) \cdot (H_{vo}) = \underline{397798.672 \text{ cft}}$$

$$\begin{aligned} M_v &= \text{vapor molecular weight (Tables 7.1-2 \& 3)} & 130.0 \text{ lb/lb-mole} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia @ } 50\text{-}60^\circ\text{F} \\ T_{La} &= \text{daily average liquid surface temperature}^\circ\text{R} & 510.510 \\ &\text{as calculated for Chicago area using AP-42, Section 7} \end{aligned}$$

$$W_v = \text{Vapor Density} = (M_v \cdot P_{va}) / (10.731 \cdot T_{La}) = \underline{0.0001131 \text{ lb/cft}}$$

$$\begin{aligned} \Delta T_a &= \text{daily ambient temp range (Chgo area)} = & 19.00 \text{ }^\circ\text{R} \\ \partial &= \text{tank paint solar absorptance (Table 7.1-7)} = & 0.54 \text{ dimensionless} \end{aligned}$$

\*(this factor ( $\partial$ ) will change for non-white tanks)

$$\begin{aligned} I &= \text{daily total solar insolation factor (Chgo)} = & 1215 \text{ Btu/sqft} \cdot \text{day} \\ \Delta T_v &= \text{daily vapor temp range} = \\ &= 0.72 \cdot (\Delta T_a) + 0.028 \cdot (\partial) \cdot (I) = & 32.0508 \text{ }^\circ\text{R} \\ T_{La} &= \text{daily average liquid surface temp }^\circ\text{R} & 510.510 \\ \Delta P_v &= \text{daily vpr pres range} = P_{v@60} - P_{v@40} = & 0.0016 \text{ psia} \\ \Delta P_b &= \text{breather vent pressure setting range} = & 0.03 \text{ psig} \\ P_a &= \text{atmospheric pressure} = & 14.7 \text{ psia} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia} \end{aligned}$$

$$K_e = \text{Vapor Space Expansion Factor} =$$

$$(\Delta T_v / T_{La}) + (\Delta P_v - \Delta P_b) / (P_a - P_{va}) = \underline{0.060849 \text{ dimensionless}}$$

$$K_s = \text{Vented Vapor Saturation Factor} =$$

$$1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo}) = \underline{0.990740 \text{ dimensionless}}$$

$$L_s = \text{Standing Storage Losses, lb/yr}$$

$$L_s = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$L_s = \underline{989.976 \text{ lb/yr}}$$

See AP-42, Section 7, for clarification of the following calculations:



$$Lw = \text{Working Losses} = 0.0010 \cdot (Mv) \cdot (Pva) \cdot (Q) \cdot (Kn) \cdot (Kp)$$

Q = annual net thruput, bbl/yr - (42 gal/bbl) =	1,091,364.1 bbl/yr
VLx = tank max liquid volume - (7.481 gal/cft)	419,943.9 cft
N = # of turnovers per year = $5.614 \cdot Q / VLx$ =	14.6 dimensionless
Kn = turnover factor, =1 unless N>36	1.0000 dimensionless
Kp = working loss product factor =	1.00 dimensionless

**\* Kp = 0.75 for crude oils,  
1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$Lw = 0.0010 \cdot (Mv) \cdot (Pva) \cdot (Q) \cdot (Kn) \cdot (Kp)$$

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$$Lw = 676.187 \text{ lb/yr}$$

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-21**  
Tank Shell Diameter..... 63 feet  
Tank Shell Height..... 37 feet  
Tank Capacity (max liquid)..... 840,000 gallons

**Product Information:**

Product Stored..... Distillate  
\*Vapor Molecular Weight..... 130.0 lb/lb-mole  
\*True Vapor Pressure @ 60° F..... 0.0056 psia - @ 60° F  
\*True Vapor Pressure @ 40° F..... 0.0040 psia - @ 40° F  
Annual Product Throughput..... **8,714,737** gallons/yr  
Average Annual Liquid Height..... 18 feet  
(If unknown, use half of tank shell height.)

\*This product information available in the AP-42, Section 7.

\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses = 0.1358 Tons/yr  
Lw = Working Losses = 0.0643 Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.2001</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

$$L_s = \text{Standing Storage Losses} = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\begin{aligned} H_r &= \text{tank roof height} = S_r \cdot R_s = 0.0625 \cdot (D/2) = & 48.000 \text{ feet} \\ H_{ro} &= \text{roof outage} = H_r/3 = & 16.000 \text{ feet} \\ H_l &= \text{liquid height (1/2 tank height if unknown)} = & 18.000 \text{ feet} \\ H_s &= \text{tank shell height} = & 37.000 \text{ feet} \\ H_{vo} &= \text{vapor space outage} = H_s - H_l + H_{ro} = & 35.000 \text{ feet} \\ D &= \text{tank diameter} = & 63.000 \text{ feet} \end{aligned}$$

$$V_v = \text{Tank Vapor Space Volume} = (\pi/4) \cdot (D^2) \cdot (H_{vo}) = \underline{109103.586 \text{ cft}}$$

$$\begin{aligned} M_v &= \text{vapor molecular weight (Tables 7.1-2 \& 3)} & 130.0 \text{ lb/lb-mole} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia @ } 50\text{-}60^\circ\text{F} \\ T_{La} &= \text{daily average liquid surface temperature}^\circ\text{R} & 510.510 \\ &\text{as calculated for Chicago area using AP-42, Section 7} \end{aligned}$$

$$W_v = \text{Vapor Density} = (M_v \cdot P_{va}) / (10.731 \cdot T_{La}) = \underline{0.0001131 \text{ lb/cft}}$$

$$\begin{aligned} \Delta T_a &= \text{daily ambient temp range (Chgo area)} = & 19.00 \text{ }^\circ\text{R} \\ \partial &= \text{tank paint solar absorptance (Table 7.1-7)} = & 0.54 \text{ dimensionless} \end{aligned}$$

**\*(this factor ( $\partial$ ) will change for non-white tanks)**

$$\begin{aligned} I &= \text{daily total solar insolation factor (Chgo)} = & 1215 \text{ Btu/sqft} \cdot \text{day} \\ \Delta T_v &= \text{daily vapor temp range} = \\ &= 0.72 \cdot (\Delta T_a) + 0.028 \cdot (\partial) \cdot (I) = & 32.0508 \text{ }^\circ\text{R} \\ T_{La} &= \text{daily average liquid surface temp }^\circ\text{R} & 510.510 \\ \Delta P_v &= \text{daily vpr pres range} = P_{v@60} - P_{v@40} = & 0.0016 \text{ psia} \\ \Delta P_b &= \text{breather vent pressure setting range} = & 0.03 \text{ psig} \\ P_a &= \text{atmospheric pressure} = & 14.7 \text{ psia} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia} \end{aligned}$$

$$K_e = \text{Vapor Space Expansion Factor} =$$

$$(\Delta T_v / T_{La}) + (\Delta P_v - \Delta P_b) / (P_a - P_{va}) = \underline{0.060849 \text{ dimensionless}}$$

$$K_s = \text{Vented Vapor Saturation Factor} =$$

$$1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo}) = \underline{0.991237 \text{ dimensionless}}$$

$$L_s = \text{Standing Storage Losses, lb/yr}$$

$$L_s = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$L_s = \underline{271.655 \text{ lb/yr}}$$

**See AP-42, Section 7, for clarification of the following calculations:**

$$Lw = \text{Working Losses} = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

Q = annual net thruput, bbl/yr - (42 gal/bbl) =	207,493.7 bbl/yr
VLx = tank max liquid volume - (7.481 gal/cft)	112,284.5 cft
N = # of turnovers per year = $5.614 * Q / VLx$ =	10.4 dimensionless
Kn = turnover factor, =1 unless N>36	1.0000 dimensionless
Kp = working loss product factor =	1.00 dimensionless

**\* Kp = 0.75 for crude oils,  
1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$Lw = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

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$$Lw = 128.559 \text{ lb/yr}$$

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-41**  
Tank Shell Diameter..... 63 feet  
Tank Shell Height..... 37 feet  
\*Tank Shell Type (Welded or Riveted)..... Welded  
\*Tank Deck Type (Welded or Bolted)..... Bolted  
\*Tank Rim Seal Type..... Vapor Mounted  
Tank Capacity (max liquid)..... 840,000 gallons

**Product Information: \*\***

Product Stored..... Gasoline  
Vapor Molecular Weight..... 62.00 lb/lb-mole  
True Vapor Pressure @ 60° F..... 5.7260 psia - @ 60° F  
Average Organic Liquid Density..... 4.90 lb/gal  
Annual Product Throughput..... 1,284,468 gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	1.606	Tons/yr
Lwd =	Withdrawal Loss =	0.002	Tons/yr
Lf =	Deck Fitting Losses =	1.944	Tons/yr
Ld =	Deck Seam Loss =	1.027	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>4.579</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft•yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	63 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)(D)\*(Mv)\*(Kc) = 3212.569 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	30583 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	63 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 3.685 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	6	33	198
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	1	56	56
Sliding Cover, Ungasketed.....	0	76	0

**Roof Leg or Hanger Well:**

Adjustable.....	26	7.9	205.4
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 510.8**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 510.8 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 3887.657 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 2054.126 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # .....	<b>D-50</b>	
Tank Shell Diameter.....	117	feet
Tank Shell Height.....	42	feet
*Tank Shell Type (Welded or Riveted).....	Bolted	
*Tank Deck Type (Welded or Bolted).....	Welded	
*Tank Rim Seal Type.....	Double Wiper	
Tank Capacity (max liquid).....	3,360,000	gallons

**Product Information: \*\***

Product Stored.....	<b>Gasoline</b>	
Vapor Molecular Weight.....	62.00	lb/lb-mole
True Vapor Pressure @ 60° F.....	5.7260	psia - @ 60° F
Average Organic Liquid Density.....	4.90	lb/gal
Annual Product Throughput.....	46,935,191	gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	2.983	Tons/yr
Lwd =	Withdrawal Loss =	0.035	Tons/yr
Lf =	Deck Fitting Losses =	3.560	Tons/yr
Ld =	Deck Seam Loss =	3.542	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>10.121</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft <sup>2</sup> •yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	117 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)(D)\*(Mv)\*(Kc) = 5966.199 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	1117505 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	117 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 69.596 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	16	33	528
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	1	56	56
Sliding Cover, Ungasketed.....	0	76	0

**Roof Leg or Hanger Well:**

Adjustable.....	38	7.9	300.2
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 935.6**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 935.6 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 7120.775 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 7084.638 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-51**  
Tank Shell Diameter..... 63 feet  
Tank Shell Height..... 37 feet  
Tank Capacity (max liquid)..... 840,000 gallons

**Product Information:**

Product Stored..... Distillate  
\*Vapor Molecular Weight..... 130.0 lb/lb-mole  
\*True Vapor Pressure @ 60° F..... 0.0056 psia - @ 60° F  
\*True Vapor Pressure @ 40° F..... 0.0040 psia - @ 40° F  
Annual Product Throughput..... **5,177,800** gallons/yr  
Average Annual Liquid Height..... 18 feet  
(If unknown, use half of tank shell height.)

\*This product information available in the AP-42, Section 7.

\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses = 0.1358 Tons/yr  
Lw = Working Losses = 0.0382 Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.1740</b>	<b>Tons/yr</b>
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See AP-42, Section 7, for clarification of the following calculations:

$$L_s = \text{Standing Storage Losses} = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\begin{aligned} H_r &= \text{tank roof height} = S_r \cdot R_s = 0.0625 \cdot (D/2) = & 48.000 \text{ feet} \\ H_{ro} &= \text{roof outage} = H_r/3 = & 16.000 \text{ feet} \\ H_l &= \text{liquid height (1/2 tank height if unknown)} = & 18.000 \text{ feet} \\ H_s &= \text{tank shell height} = & 37.000 \text{ feet} \\ H_{vo} &= \text{vapor space outage} = H_s - H_l + H_{ro} = & 35.000 \text{ feet} \\ D &= \text{tank diameter} = & 63.000 \text{ feet} \end{aligned}$$

$$V_v = \text{Tank Vapor Space Volume} = (\pi/4) \cdot (D^2) \cdot (H_{vo}) = \underline{109103.586 \text{ cft}}$$

$$\begin{aligned} M_v &= \text{vapor molecular weight (Tables 7.1-2 \& 3)} & 130.0 \text{ lb/lb-mole} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia @ } 50\text{-}60^\circ\text{F} \\ T_{La} &= \text{daily average liquid surface temperature}^\circ\text{R} & 510.510 \\ &\text{as calculated for Chicago area using AP-42, Section 7} \end{aligned}$$

$$W_v = \text{Vapor Density} = (M_v \cdot P_{va}) / (10.731 \cdot T_{La}) = \underline{0.0001131 \text{ lb/cft}}$$

$$\begin{aligned} \Delta T_a &= \text{daily ambient temp range (Chgo area)} = & 19.00 \text{ }^\circ\text{R} \\ \partial &= \text{tank paint solar absorptance (Table 7.1-7)} = & 0.54 \text{ dimensionless} \end{aligned}$$

\*(this factor  $\partial$ ) will change for non-white tanks)

$$\begin{aligned} I &= \text{daily total solar insolation factor (Chgo)} = & 1215 \text{ Btu/sqft} \cdot \text{day} \\ \Delta T_v &= \text{daily vapor temp range} = \\ &= 0.72 \cdot (\Delta T_a) + 0.028 \cdot (\partial) \cdot (I) = & 32.0508 \text{ }^\circ\text{R} \\ T_{La} &= \text{daily average liquid surface temp }^\circ\text{R} & 510.510 \\ \Delta P_v &= \text{daily vpr pres range} = P_{v@60} - P_{v@40} = & 0.0016 \text{ psia} \\ \Delta P_b &= \text{breather vent pressure setting range} = & 0.03 \text{ psig} \\ P_a &= \text{atmospheric pressure} = & 14.7 \text{ psia} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia} \end{aligned}$$

$$K_e = \text{Vapor Space Expansion Factor} =$$

$$(\Delta T_v / T_{La}) + (\Delta P_v - \Delta P_b) / (P_a - P_{va}) = \underline{0.060849 \text{ dimensionless}}$$

$$K_s = \text{Vented Vapor Saturation Factor} =$$

$$1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo}) = \underline{0.991237 \text{ dimensionless}}$$

$$L_s = \text{Standing Storage Losses, lb/yr}$$

$$L_s = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\underline{L_s = 271.655 \text{ lb/yr}}$$

See AP-42, Section 7, for clarification of the following calculations:

$$Lw = \text{Working Losses} = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

Q = annual net thruput, bbl/yr - (42 gal/bbl) =	123,281.0 bbl/yr
VLx = tank max liquid volume - (7.481 gal/cft)	112,284.5 cft
N = # of turnovers per year = $5.614 * Q / VLx$ =	6.2 dimensionless
Kn = turnover factor, =1 unless N>36	1.0000 dimensionless
Kp = working loss product factor =	1.00 dimensionless

**\* Kp = 0.75 for crude oils,  
1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$Lw = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

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$$Lw = 76.382 \text{ lb/yr}$$

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-52**  
Tank Shell Diameter..... 63 feet  
Tank Shell Height..... 37 feet  
Tank Capacity (max liquid)..... 840,000 gallons

**Product Information:**

Product Stored..... Distillate  
\*Vapor Molecular Weight..... 130.0 lb/lb-mole  
\*True Vapor Pressure @ 60° F..... 0.0056 psia - @ 60° F  
\*True Vapor Pressure @ 40° F..... 0.0040 psia - @ 40° F  
Annual Product Throughput..... **11,277,638** gallons/yr  
Average Annual Liquid Height..... 18 feet  
(If unknown, use half of tank shell height.)

\*This product information available in the AP-42, Section 7.

\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses = 0.1358 Tons/yr  
Lw = Working Losses = 0.0832 Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.2190</b>	<b>Tons/yr</b>
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See AP-42, Section 7, for clarification of the following calculations:

$$L_s = \text{Standing Storage Losses} = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\begin{aligned} H_r &= \text{tank roof height} = S_r \cdot R_s = 0.0625 \cdot (D/2) = & 48.000 \text{ feet} \\ H_{ro} &= \text{roof outage} = H_r/3 = & 16.000 \text{ feet} \\ H_l &= \text{liquid height (1/2 tank height if unknown)} = & 18.000 \text{ feet} \\ H_s &= \text{tank shell height} = & 37.000 \text{ feet} \\ H_{vo} &= \text{vapor space outage} = H_s - H_l + H_{ro} = & 35.000 \text{ feet} \\ D &= \text{tank diameter} = & 63.000 \text{ feet} \end{aligned}$$

$$V_v = \text{Tank Vapor Space Volume} = (\pi/4) \cdot (D^2) \cdot (H_{vo}) = \underline{109103.586 \text{ cft}}$$

$$\begin{aligned} M_v &= \text{vapor molecular weight (Tables 7.1-2 \& 3)} & 130.0 \text{ lb/lb-mole} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia @ } 50\text{-}60^\circ\text{F} \\ T_{La} &= \text{daily average liquid surface temperature}^\circ\text{R} & 510.510 \\ &\text{as calculated for Chicago area using AP-42, Section 7} \end{aligned}$$

$$W_v = \text{Vapor Density} = (M_v \cdot P_{va}) / (10.731 \cdot T_{La}) = \underline{0.0001131 \text{ lb/cft}}$$

$$\begin{aligned} \Delta T_a &= \text{daily ambient temp range (Chgo area)} = & 19.00 \text{ }^\circ\text{R} \\ \partial &= \text{tank paint solar absorptance (Table 7.1-7)} = & 0.54 \text{ dimensionless} \end{aligned}$$

\*(this factor  $\partial$ ) will change for non-white tanks)

$$\begin{aligned} I &= \text{daily total solar insolation factor (Chgo)} = & 1215 \text{ Btu/sqft} \cdot \text{day} \\ \Delta T_v &= \text{daily vapor temp range} = \\ &= 0.72 \cdot (\Delta T_a) + 0.028 \cdot (\partial) \cdot (I) = & 32.0508 \text{ }^\circ\text{R} \\ T_{La} &= \text{daily average liquid surface temp }^\circ\text{R} & 510.510 \\ \Delta P_v &= \text{daily vpr pres range} = P_{v@60} - P_{v@40} = & 0.0016 \text{ psia} \\ \Delta P_b &= \text{breather vent pressure setting range} = & 0.03 \text{ psig} \\ P_a &= \text{atmospheric pressure} = & 14.7 \text{ psia} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia} \end{aligned}$$

$$K_e = \text{Vapor Space Expansion Factor} =$$

$$(\Delta T_v / T_{La}) + (\Delta P_v - \Delta P_b) / (P_a - P_{va}) = \underline{0.060849 \text{ dimensionless}}$$

$$K_s = \text{Vented Vapor Saturation Factor} =$$

$$1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo}) = \underline{0.991237 \text{ dimensionless}}$$

$$L_s = \text{Standing Storage Losses, lb/yr}$$

$$L_s = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\underline{L_s = 271.655 \text{ lb/yr}}$$

See AP-42, Section 7, for clarification of the following calculations:

$$Lw = \text{Working Losses} = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

Q = annual net thruput, bbl/yr - (42 gal/bbl) =	268,515.2 bbl/yr
VLx = tank max liquid volume - (7.481 gal/cft)	112,284.5 cft
N = # of turnovers per year = $5.614 * Q / VLx$ =	13.4 dimensionless
Kn = turnover factor, =1 unless N>36	1.0000 dimensionless
Kp = working loss product factor =	1.00 dimensionless

**\* Kp = 0.75 for crude oils,  
1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$Lw = 0.0010 * (Mv) * (Pva) * (Q) * (Kn) * (Kp)$$

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$$Lw = 166.367 \text{ lb/yr}$$

The End



**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-55**  
Tank Shell Diameter..... 63 feet  
Tank Shell Height..... 37 feet  
\*Tank Shell Type (Welded or Riveted)..... Welded  
\*Tank Deck Type (Welded or Bolted)..... Bolted  
\*Tank Rim Seal Type..... Vapor Mounted  
Tank Capacity (max liquid)..... 840,000 gallons

**Product Information: \*\***

Product Stored..... Gasoline  
Vapor Molecular Weight..... 62.00 lb/lb-mole  
True Vapor Pressure @ 60° F..... 5.7260 psia - @ 60° F  
Average Organic Liquid Density..... 4.90 lb/gal  
Annual Product Throughput..... 1,284,468 gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	1.606	Tons/yr
Lwd =	Withdrawal Loss =	0.002	Tons/yr
Lf =	Deck Fitting Losses =	2.919	Tons/yr
Ld =	Deck Seam Loss =	1.027	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>5.554</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft•yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	63 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)(D)\*(Mv)\*(Kc) = 3212.569 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	30583 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	63 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 3.685 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	0	33	0
Builtup Column - Sliding Cover, Ungasketed.....	10	47	470

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	1	56	56
Sliding Cover, Ungasketed.....	0	76	0

**Roof Leg or Hanger Well:**

Adjustable.....	24	7.9	189.6
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 767**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 767 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 5837.574 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 2054.126 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-57**  
Tank Shell Diameter..... 63 feet  
Tank Shell Height..... 37 feet  
Tank Capacity (max liquid)..... 840,000 gallons

**Product Information:**

Product Stored..... Distillate  
\*Vapor Molecular Weight..... 130.0 lb/lb-mole  
\*True Vapor Pressure @ 60° F..... 0.0056 psia - @ 60° F  
\*True Vapor Pressure @ 40° F..... 0.0040 psia - @ 40° F  
Annual Product Throughput..... **9,141,002** gallons/yr  
Average Annual Liquid Height..... 18 feet  
(If unknown, use half of tank shell height.)

\*This product information available in the AP-42, Section 7.  
\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses = 0.1358 Tons/yr  
Lw = Working Losses = 0.0674 Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.2033</b>	<b>Tons/yr</b>
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See AP-42, Section 7, for clarification of the following calculations:

$$L_s = \text{Standing Storage Losses} = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\begin{aligned} H_r &= \text{tank roof height} = S_r \cdot R_s = 0.0625 \cdot (D/2) = & 48.000 \text{ feet} \\ H_{ro} &= \text{roof outage} = H_r/3 = & 16.000 \text{ feet} \\ H_l &= \text{liquid height (1/2 tank height if unknown)} = & 18.000 \text{ feet} \\ H_s &= \text{tank shell height} = & 37.000 \text{ feet} \\ H_{vo} &= \text{vapor space outage} = H_s - H_l + H_{ro} = & 35.000 \text{ feet} \\ D &= \text{tank diameter} = & 63.000 \text{ feet} \end{aligned}$$

$$V_v = \text{Tank Vapor Space Volume} = (\pi/4) \cdot (D^2) \cdot (H_{vo}) = \underline{109103.586 \text{ cft}}$$

$$\begin{aligned} M_v &= \text{vapor molecular weight (Tables 7.1-2 \& 3)} & 130.0 \text{ lb/lb-mole} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia @ } 50\text{-}60^\circ\text{F} \\ T_{La} &= \text{daily average liquid surface temperature}^\circ\text{R} & 510.510 \\ &\text{as calculated for Chicago area using AP-42, Section 7} \end{aligned}$$

$$W_v = \text{Vapor Density} = (M_v \cdot P_{va}) / (10.731 \cdot T_{La}) = \underline{0.0001131 \text{ lb/cft}}$$

$$\begin{aligned} \Delta T_a &= \text{daily ambient temp range (Chgo area)} = & 19.00 \text{ }^\circ\text{R} \\ \partial &= \text{tank paint solar absorptance (Table 7.1-7)} = & 0.54 \text{ dimensionless} \end{aligned}$$

\*(this factor  $\partial$ ) will change for non-white tanks)

$$\begin{aligned} I &= \text{daily total solar insolation factor (Chgo)} = & 1215 \text{ Btu/sqft} \cdot \text{day} \\ \Delta T_v &= \text{daily vapor temp range} = \\ &= 0.72 \cdot (\Delta T_a) + 0.028 \cdot (\partial) \cdot (I) = & 32.0508 \text{ }^\circ\text{R} \\ T_{La} &= \text{daily average liquid surface temp }^\circ\text{R} & 510.510 \\ \Delta P_v &= \text{daily vpr pres range} = P_{v@60} - P_{v@40} = & 0.0016 \text{ psia} \\ \Delta P_b &= \text{breather vent pressure setting range} = & 0.03 \text{ psig} \\ P_a &= \text{atmospheric pressure} = & 14.7 \text{ psia} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia} \end{aligned}$$

$$K_e = \text{Vapor Space Expansion Factor} =$$

$$(\Delta T_v / T_{La}) + (\Delta P_v - \Delta P_b) / (P_a - P_{va}) = \underline{0.060849 \text{ dimensionless}}$$

$$K_s = \text{Vented Vapor Saturation Factor} =$$

$$1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo}) = \underline{0.991237 \text{ dimensionless}}$$

$$L_s = \text{Standing Storage Losses, lb/yr}$$

$$L_s = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\underline{L_s = 271.655 \text{ lb/yr}}$$

See AP-42, Section 7, for clarification of the following calculations:

$$Lw = \text{Working Losses} = 0.0010 \cdot (Mv) \cdot (Pva) \cdot (Q) \cdot (Kn) \cdot (Kp)$$

Q = annual net thruput, bbl/yr - (42 gal/bbl) =	217,642.9 bbl/yr
VLx = tank max liquid volume - (7.481 gal/cft)	112,284.5 cft
N = # of turnovers per year = $5.614 \cdot Q / VLx$ =	10.9 dimensionless
Kn = turnover factor, =1 unless N>36	1.0000 dimensionless
Kp = working loss product factor =	1.00 dimensionless

\* **Kp = 0.75 for crude oils,**  
**1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$Lw = 0.0010 \cdot (Mv) \cdot (Pva) \cdot (Q) \cdot (Kn) \cdot (Kp)$$

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$$Lw = 134.847 \text{ lb/yr}$$

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # .....	<b>D-72</b>	
Tank Shell Diameter.....	117	feet
Tank Shell Height.....	42	feet
*Tank Shell Type (Welded or Riveted).....	Welded	
*Tank Deck Type (Welded or Bolted).....	Bolted	
*Tank Rim Seal Type.....	Liquid Mounted	
Tank Capacity (max liquid).....	3,360,000	gallons

**Product Information: \*\***

Product Stored.....	<b>Gasoline</b>	
Vapor Molecular Weight.....	62.00	lb/lb-mole
True Vapor Pressure @ 60° F.....	5.7260	psia - @ 60° F
Average Organic Liquid Density.....	4.90	lb/gal
Annual Product Throughput.....	<b>33,840,900</b>	gallons/yr

\*if this information changes, see calculations  
if tank contains crude oil, see calculations  
\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	2.983	Tons/yr
Lwd =	Withdrawal Loss =	0.025	Tons/yr
Lf =	Deck Fitting Losses =	3.636	Tons/yr
Ld =	Deck Seam Loss =	3.542	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>10.187</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

### Rim Seal Loss:

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft <sup>2</sup> •yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	117 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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$$L_r = \text{Rim Seal Loss} = (K_r) \cdot (P^*) \cdot (D) \cdot (M_v) \cdot (K_c) = 5966.199 \text{ lb/yr}$$


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### Withdrawal Loss:

Q = annual throughput, (42 gal/bbl) =	805736 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	117 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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$$\text{Withdrawal Loss} = (0.943 \cdot Q \cdot C \cdot WL / D) (1 + N_c / D) = 50.179 \text{ lb/yr}$$


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### Summary of Internal Float Roof Tank Deck Fitting Loss Factors

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	16	33	528
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0
Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0



**Ladder Well:**

Sliding Cover, Gasketed.....	0	56	0
Sliding Cover, Ungasketed.....	1	76	76

**Roof Leg or Hanger Well:**

Adjustable.....	38	7.9	300.2
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area).....	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0
Vacuum Breaker:			
Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 955.6**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 955.6 lb-mole/yr  
(go to cell G47)  
P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 7272.993 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr  
**(0.0 for welded deck, 0.34 for bolted deck)**  
Sd = deck seam length factor = 0.2 ft/sqft  
D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 7084.638 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-73**  
Tank Shell Diameter..... 117 feet  
Tank Shell Height..... 42 feet  
\*Tank Shell Type (Welded or Riveted)..... Welded  
\*Tank Deck Type (Welded or Bolted)..... Bolted  
\*Tank Rim Seal Type..... Liquid Mounted  
Tank Capacity (max liquid)..... 3,360,000 gallons

**Product Information: \*\***

Product Stored..... Gasoline  
Vapor Molecular Weight..... 62.00 lb/lb-mole  
True Vapor Pressure @ 60° F..... 5.7260 psia - @ 60° F  
Average Organic Liquid Density..... 4.90 lb/gal  
Annual Product Throughput..... 48,719,277 gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	2.983	Tons/yr
Lwd =	Withdrawal Loss =	0.036	Tons/yr
Lf =	Deck Fitting Losses =	3.636	Tons/yr
Ld =	Deck Seam Loss =	3.542	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>10.198</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft•yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	117 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)(D)\*(Mv)\*(Kc) = 5966.199 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	1159983 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	117 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 72.241 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	16	33	528
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	0	56	0
Sliding Cover, Ungasketed.....	1	76	76

**Roof Leg or Hanger Well:**

Adjustable.....	38	7.9	300.2
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 955.6**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 955.6 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 7272.993 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 7084.638 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name .....	<b>Buckeye Terminals, LLC</b>
Year of Data .....	<b>2003</b>
Plant ID # .....	089-00239

**Tank Information:**

Tank ID # .....	<b>D-74</b>	
Tank Shell Diameter.....	63	feet
Tank Shell Height.....	37	feet
Tank Capacity (max liquid).....	840,000	gallons

**Product Information:**

Product Stored.....	Distillate	
*Vapor Molecular Weight.....	130.0	lb/lb-mole
*True Vapor Pressure @ 60° F.....	0.0056	psia - @ 60° F
*True Vapor Pressure @ 40° F.....	0.0040	psia - @ 40° F
Annual Product Throughput.....	<b>9,235,727</b>	gallons/yr
Average Annual Liquid Height.....	18	feet
(If unknown, use half of tank shell height.)		

\*This product information available in the AP-42, Section 7.

\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses =	0.1358	Tons/yr
Lw = Working Losses =	0.0681	Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.2039</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

**Ls = Standing Storage Losses = 365\*(Vv)\*(Wv)\*(Ke)\*(Ks)**

Hr = tank roof height =  $Sr * Rs = 0.0625 * (D/2) =$  48.000 feet  
Hro = roof outage =  $Hr/3 =$  16.000 feet  
Hl = liquid height (1/2 tank height if unknown) = 18.000 feet  
Hs = tank shell height = 37.000 feet  
Hvo = vapor space outage =  $Hs - Hl + Hro =$  35.000 feet  
D = tank diameter = 63.000 feet

**Vv = Tank Vapor Space Volume =  $(\pi/4) * (D^2) * (Hvo) =$**

109103.586 cft

Mv = vapor molecular weight (Tables 7.1-2 & 3) 130.0 lb/lb-mole  
Pva = vapor pressure at TLa (Tables 7.1-2 & 3) 0.004766 psia @ 50-60°F  
TLa = daily average liquid surface temperature °R 510.510 °R  
as calculated for Chicago area using AP-42, Section 7

**Wv = Vapor Density =  $(Mv * Pva) / (10.731 * TLa) =$**

0.0001131 lb/cft

$\Delta Ta$  = daily ambient temp range (Chgo area) = 19.00 °R  
 $\partial$  = tank paint solar absorptance (Table 7.1-7) = 0.54 dimensionless

**\*(this factor ( $\partial$ ) will change for non-white tanks)**

I = daily total solar insolation factor (Chgo) = 1215 Btu/sqft•day  
 $\Delta Tv$  = daily vapor temp range =  
 $= 0.72 * (\Delta Ta) + 0.028 * (\partial) * (I) =$  32.0508 °R  
TLa = daily average liquid surface temp °R 510.510 °R  
 $\Delta Pv$  = daily vpr pres range =  $Pv@60 - Pv@40 =$  0.0016 psia  
 $\Delta Pb$  = breather vent pressure setting range = 0.03 psig  
Pa = atmospheric pressure = 14.7 psia  
Pva = vapor pressure at TLa (Tables 7.1-2 & 3) 0.004766 psia

**Ke = Vapor Space Expansion Factor =**

**$(\Delta Tv / TLa) + (\Delta Pv - \Delta Pb) / (Pa - Pva) =$**

0.060849 dimensionless

**Ks = Vented Vapor Saturation Factor =**

**$1 / (1 + 0.053 * Pva * Hvo) =$**

0.991237 dimensionless

**Ls = Standing Storage Losses, lb/yr**

**$Ls = 365 * (Vv) * (Wv) * (Ke) * (Ks)$**

**Ls = 271.655 lb/yr**

**See AP-42, Section 7, for clarification of the following calculations:**

**Lw = Working Losses = 0.0010\*(Mv)\*(Pva)\*(Q)\*(Kn)\*(Kp)**

Q = annual net thruput, bbl/yr - (42 gal/bbl) = 219,898.3 bbl/yr  
VLx = tank max liquid volume - (7.481 gal/cft) 112,284.5 cft  
N = # of turnovers per year =  $5.614 * Q / VLx =$  11.0 dimensionless

Kn = turnover factor, =1 unless N>36

1.0000 dimensionless

Kp = working loss product factor =

1.00 dimensionless

**\* Kp = 0.75 for crude oils,  
1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$\mathbf{Lw = 0.0010*(Mv)*(Pva)*(Q)*(Kn)*(Kp)}$$

<b>Lw =</b>	<b>136.245</b>	<b>lb/yr</b>
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The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-75**  
Tank Shell Diameter..... 63 feet  
Tank Shell Height..... 37 feet  
Tank Capacity (max liquid)..... 840,000 gallons

**Product Information:**

Product Stored..... Distillate  
\*Vapor Molecular Weight..... 130.0 lb/lb-mole  
\*True Vapor Pressure @ 60° F..... 0.0056 psia - @ 60° F  
\*True Vapor Pressure @ 40° F..... 0.0040 psia - @ 40° F  
Annual Product Throughput..... **9,235,727** gallons/yr  
Average Annual Liquid Height..... 18 feet  
(If unknown, use half of tank shell height.)

\*This product information available in the AP-42, Section 7.  
\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses = 0.1358 Tons/yr  
Lw = Working Losses = 0.0681 Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.2039</b>	<b>Tons/yr</b>
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See AP-42, Section 7, for clarification of the following calculations:

$$L_s = \text{Standing Storage Losses} = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\begin{aligned} H_r &= \text{tank roof height} = S_r \cdot R_s = 0.0625 \cdot (D/2) = & 48.000 \text{ feet} \\ H_{ro} &= \text{roof outage} = H_r/3 = & 16.000 \text{ feet} \\ H_l &= \text{liquid height (1/2 tank height if unknown)} = & 18.000 \text{ feet} \\ H_s &= \text{tank shell height} = & 37.000 \text{ feet} \\ H_{vo} &= \text{vapor space outage} = H_s - H_l + H_{ro} = & 35.000 \text{ feet} \\ D &= \text{tank diameter} = & 63.000 \text{ feet} \end{aligned}$$

$$V_v = \text{Tank Vapor Space Volume} = (\pi/4) \cdot (D^2) \cdot (H_{vo}) = \underline{109103.586 \text{ cft}}$$

$$\begin{aligned} M_v &= \text{vapor molecular weight (Tables 7.1-2 \& 3)} & 130.0 \text{ lb/lb-mole} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia @ } 50\text{-}60^\circ\text{F} \\ T_{La} &= \text{daily average liquid surface temperature}^\circ\text{R} & 510.510 \\ &\text{as calculated for Chicago area using AP-42, Section 7} \end{aligned}$$

$$W_v = \text{Vapor Density} = (M_v \cdot P_{va}) / (10.731 \cdot T_{La}) = \underline{0.0001131 \text{ lb/cft}}$$

$$\begin{aligned} \Delta T_a &= \text{daily ambient temp range (Chgo area)} = & 19.00 \text{ }^\circ\text{R} \\ \partial &= \text{tank paint solar absorptance (Table 7.1-7)} = & 0.54 \text{ dimensionless} \end{aligned}$$

\*(this factor  $\partial$ ) will change for non-white tanks)

$$\begin{aligned} I &= \text{daily total solar insolation factor (Chgo)} = & 1215 \text{ Btu/sqft} \cdot \text{day} \\ \Delta T_v &= \text{daily vapor temp range} = \\ &= 0.72 \cdot (\Delta T_a) + 0.028 \cdot (\partial) \cdot (I) = & 32.0508 \text{ }^\circ\text{R} \\ T_{La} &= \text{daily average liquid surface temp }^\circ\text{R} & 510.510 \\ \Delta P_v &= \text{daily vpr pres range} = P_{v@60} - P_{v@40} = & 0.0016 \text{ psia} \\ \Delta P_b &= \text{breather vent pressure setting range} = & 0.03 \text{ psig} \\ P_a &= \text{atmospheric pressure} = & 14.7 \text{ psia} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia} \end{aligned}$$

$$K_e = \text{Vapor Space Expansion Factor} =$$

$$(\Delta T_v / T_{La}) + (\Delta P_v - \Delta P_b) / (P_a - P_{va}) = \underline{0.060849 \text{ dimensionless}}$$

$$K_s = \text{Vented Vapor Saturation Factor} =$$

$$1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo}) = \underline{0.991237 \text{ dimensionless}}$$

$$L_s = \text{Standing Storage Losses, lb/yr}$$

$$L_s = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$L_s = \underline{271.655 \text{ lb/yr}}$$

See AP-42, Section 7, for clarification of the following calculations:

$$Lw = \text{Working Losses} = 0.0010 \cdot (Mv) \cdot (Pva) \cdot (Q) \cdot (Kn) \cdot (Kp)$$

Q = annual net thruput, bbl/yr - (42 gal/bbl) =	219,898.3 bbl/yr
VLx = tank max liquid volume - (7.481 gal/cft)	112,284.5 cft
N = # of turnovers per year = $5.614 \cdot Q / VLx$ =	11.0 dimensionless
Kn = turnover factor, =1 unless N>36	1.0000 dimensionless
Kp = working loss product factor =	1.00 dimensionless

**\* Kp = 0.75 for crude oils,  
1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$Lw = 0.0010 \cdot (Mv) \cdot (Pva) \cdot (Q) \cdot (Kn) \cdot (Kp)$$

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$$Lw = 136.245 \text{ lb/yr}$$

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # .....	<b>D-80</b>	
Tank Shell Diameter.....	117	feet
Tank Shell Height.....	42	feet
*Tank Shell Type (Welded or Riveted).....	Welded	
*Tank Deck Type (Welded or Bolted).....	Bolted	
*Tank Rim Seal Type.....	Double Wiper	
Tank Capacity (max liquid).....	3,360,000	gallons

**Product Information: \*\***

Product Stored.....	<b>Gasoline</b>	
Vapor Molecular Weight.....	62.00	lb/lb-mole
True Vapor Pressure @ 60° F.....	5.7260	psia - @ 60° F
Average Organic Liquid Density.....	4.90	lb/gal
Annual Product Throughput.....	49,748,558	gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	2.983	Tons/yr
Lwd =	Withdrawal Loss =	0.037	Tons/yr
Lf =	Deck Fitting Losses =	3.606	Tons/yr
Ld =	Deck Seam Loss =	3.542	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>10.169</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft•yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	117 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)\*(D)\*(Mv)\*(Kc) = 5966.199 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	1184489 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	117 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 73.767 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	16	33	528
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	0	56	0
Sliding Cover, Ungasketed.....	1	76	76

**Roof Leg or Hanger Well:**

Adjustable.....	37	7.9	292.3
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 947.7**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 947.7 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 7212.867 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 7084.638 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # .....	<b>D-83</b>	
Tank Shell Diameter.....	117	feet
Tank Shell Height.....	42	feet
*Tank Shell Type (Welded or Riveted).....	Welded	
*Tank Deck Type (Welded or Bolted).....	Bolted	
*Tank Rim Seal Type.....	Double Wiper	
Tank Capacity (max liquid).....	3,360,000	gallons

**Product Information: \*\***

Product Stored.....	<b>Gasoline</b>	
Vapor Molecular Weight.....	62.00	lb/lb-mole
True Vapor Pressure @ 60° F.....	5.7260	psia - @ 60° F
Average Organic Liquid Density.....	4.90	lb/gal
Annual Product Throughput.....	52,356,068	gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	2.983	Tons/yr
Lwd =	Withdrawal Loss =	0.039	Tons/yr
Lf =	Deck Fitting Losses =	3.606	Tons/yr
Ld =	Deck Seam Loss =	3.542	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>10.171</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft•yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	117 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)\*(D)\*(Mv)\*(Kc) = 5966.199 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	1246573 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	117 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 77.634 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	16	33	528
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	0	56	0
Sliding Cover, Ungasketed.....	1	76	76

**Roof Leg or Hanger Well:**

Adjustable.....	37	7.9	292.3
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 947.7**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 947.7 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 7212.867 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 7084.638 lb/yr**

Tanks with welded decks do not have deck seam losses

The End



**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Fixed Roof Tank -Vertical**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-84**  
Tank Shell Diameter..... 117 feet  
Tank Shell Height..... 42 feet  
Tank Capacity (max liquid)..... 3,360,000 gallons

**Product Information:**

Product Stored..... Distillate  
\*Vapor Molecular Weight..... 130.0 lb/lb-mole  
\*True Vapor Pressure @ 60° F..... 0.0056 psia - @ 60° F  
\*True Vapor Pressure @ 40° F..... 0.0040 psia - @ 40° F  
Annual Product Throughput..... 41,582,674 gallons/yr  
Average Annual Liquid Height..... 21 feet  
(If unknown, use half of tank shell height.)

\*This product information available in the AP-42, Section 7.

\*if tank is not white, or if it contains crude oils - see calculations

Ls = Standing Storage Losses = 0.4950 Tons/yr  
Lw = Working Losses = 0.3067 Tons/yr

<b>Lt = Ls + Lw = Total Losses =</b>	<b>0.8017</b>	<b>Tons/yr</b>
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See AP-42, Section 7, for clarification of the following calculations:

$$L_s = \text{Standing Storage Losses} = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$\begin{aligned} H_r &= \text{tank roof height} = S_r \cdot R_s = 0.0625 \cdot (D/2) = & 48.000 \text{ feet} \\ H_{ro} &= \text{roof outage} = H_r/3 = & 16.000 \text{ feet} \\ H_l &= \text{liquid height (1/2 tank height if unknown)} = & 21.000 \text{ feet} \\ H_s &= \text{tank shell height} = & 42.000 \text{ feet} \\ H_{vo} &= \text{vapor space outage} = H_s - H_l + H_{ro} = & 37.000 \text{ feet} \\ D &= \text{tank diameter} = & 117.000 \text{ feet} \end{aligned}$$

$$V_v = \text{Tank Vapor Space Volume} = (\pi/4) \cdot (D^2) \cdot (H_{vo}) = \underline{397798.672 \text{ cft}}$$

$$\begin{aligned} M_v &= \text{vapor molecular weight (Tables 7.1-2 \& 3)} & 130.0 \text{ lb/lb-mole} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia @ } 50\text{-}60^\circ\text{F} \\ T_{La} &= \text{daily average liquid surface temperature}^\circ\text{R} & 510.510 \\ &\text{as calculated for Chicago area using AP-42, Section 7} \end{aligned}$$

$$W_v = \text{Vapor Density} = (M_v \cdot P_{va}) / (10.731 \cdot T_{La}) = \underline{0.0001131 \text{ lb/cft}}$$

$$\begin{aligned} \Delta T_a &= \text{daily ambient temp range (Chgo area)} = & 19.00 \text{ }^\circ\text{R} \\ \partial &= \text{tank paint solar absorptance (Table 7.1-7)} = & 0.54 \text{ dimensionless} \end{aligned}$$

\*(this factor ( $\partial$ ) will change for non-white tanks)

$$\begin{aligned} I &= \text{daily total solar insolation factor (Chgo)} = & 1215 \text{ Btu/sqft} \cdot \text{day} \\ \Delta T_v &= \text{daily vapor temp range} = \\ &= 0.72 \cdot (\Delta T_a) + 0.028 \cdot (\partial) \cdot (I) = & 32.0508 \text{ }^\circ\text{R} \\ T_{La} &= \text{daily average liquid surface temp }^\circ\text{R} & 510.510 \\ \Delta P_v &= \text{daily vpr pres range} = P_{v@60} - P_{v@40} = & 0.0016 \text{ psia} \\ \Delta P_b &= \text{breather vent pressure setting range} = & 0.03 \text{ psig} \\ P_a &= \text{atmospheric pressure} = & 14.7 \text{ psia} \\ P_{va} &= \text{vapor pressure at TL} (Tables 7.1-2 \& 3) & 0.004766 \text{ psia} \end{aligned}$$

$$K_e = \text{Vapor Space Expansion Factor} =$$

$$(\Delta T_v / T_{La}) + (\Delta P_v - \Delta P_b) / (P_a - P_{va}) = \underline{0.060849 \text{ dimensionless}}$$

$$K_s = \text{Vented Vapor Saturation Factor} =$$

$$1 / (1 + 0.053 \cdot P_{va} \cdot H_{vo}) = \underline{0.990740 \text{ dimensionless}}$$

$$L_s = \text{Standing Storage Losses, lb/yr}$$

$$L_s = 365 \cdot (V_v) \cdot (W_v) \cdot (K_e) \cdot (K_s)$$

$$L_s = \underline{989.976 \text{ lb/yr}}$$

See AP-42, Section 7, for clarification of the following calculations:

$$Lw = \text{Working Losses} = 0.0010 \cdot (Mv) \cdot (Pva) \cdot (Q) \cdot (Kn) \cdot (Kp)$$

Q = annual net thruput, bbl/yr - (42 gal/bbl) =	990,063.7 bbl/yr
VLx = tank max liquid volume - (7.481 gal/cft)	449,137.8 cft
N = # of turnovers per year = $5.614 \cdot Q / VLx$ =	12.4 dimensionless
Kn = turnover factor, =1 unless N>36	1.0000 dimensionless
Kp = working loss product factor =	1.00 dimensionless

**\* Kp = 0.75 for crude oils,  
1.0 for all other products**

**Lw = Working Losses, lb/yr**

$$Lw = 0.0010 \cdot (Mv) \cdot (Pva) \cdot (Q) \cdot (Kn) \cdot (Kp)$$

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$$Lw = 613.424 \text{ lb/yr}$$

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-85**  
Tank Shell Diameter..... 117 feet  
Tank Shell Height..... 42 feet  
\*Tank Shell Type (Welded or Riveted)..... Welded  
\*Tank Deck Type (Welded or Bolted)..... Bolted  
\*Tank Rim Seal Type..... Vapor Mounted  
Tank Capacity (max liquid)..... 3,360,000 gallons

**Product Information: \*\***

Product Stored..... Gasoline  
Vapor Molecular Weight..... 62.00 lb/lb-mole  
True Vapor Pressure @ 60° F..... 5.7260 psia - @ 60° F  
Average Organic Liquid Density..... 4.90 lb/gal  
Annual Product Throughput..... 42,955,306 gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	2.983	Tons/yr
Lwd =	Withdrawal Loss =	0.032	Tons/yr
Lf =	Deck Fitting Losses =	3.606	Tons/yr
Ld =	Deck Seam Loss =	3.542	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>10.164</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft•yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	117 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)\*(D)\*(Mv)\*(Kc) = 5966.199 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	1022745 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	117 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 63.694 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	16	33	528
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	0	56	0
Sliding Cover, Ungasketed.....	1	76	76

**Roof Leg or Hanger Well:**

Adjustable.....	37	7.9	292.3
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 947.7**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 947.7 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 7212.867 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 7084.638 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-89**  
Tank Shell Diameter..... 63 feet  
Tank Shell Height..... 37 feet  
\*Tank Shell Type (Welded or Riveted)..... Welded  
\*Tank Deck Type (Welded or Bolted)..... Bolted  
\*Tank Rim Seal Type..... Vapor Mounted  
Tank Capacity (max liquid)..... 840,000 gallons

**Product Information: \*\***

Product Stored..... Gasoline  
Vapor Molecular Weight..... 62.00 lb/lb-mole  
True Vapor Pressure @ 60° F..... 5.7260 psia - @ 60° F  
Average Organic Liquid Density..... 4.90 lb/gal  
Annual Product Throughput..... 1,284,468 gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	1.606	Tons/yr
Lwd =	Withdrawal Loss =	0.002	Tons/yr
Lf =	Deck Fitting Losses =	2.009	Tons/yr
Ld =	Deck Seam Loss =	1.027	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>4.644</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft•yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	63 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

---

**Lr = Rim Seal Loss = (Kr)\*(P\*)\*(D)\*(Mv)\*(Kc) = 3212.569 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	30583 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	63 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

---

**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 3.685 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	7	33	231
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0



Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	1	56	56
Sliding Cover, Ungasketed.....	0	76	0

**Roof Leg or Hanger Well:**

Adjustable.....	24	7.9	189.6
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 528**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 528 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 4018.565 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 2054.126 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-91**  
Tank Shell Diameter..... 35 feet  
Tank Shell Height..... 29 feet  
\*Tank Shell Type (Welded or Riveted)..... Welded  
\*Tank Deck Type (Welded or Bolted)..... Bolted  
\*Tank Rim Seal Type..... Vapor Mounted  
Tank Capacity (max liquid)..... 210,000 gallons

**Product Information: \*\***

Product Stored..... Gasoline  
Vapor Molecular Weight..... 62.00 lb/lb-mole  
True Vapor Pressure @ 60° F..... 5.7260 psia - @ 60° F  
Average Organic Liquid Density..... 4.90 lb/gal  
Annual Product Throughput..... 2,757,616 gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	0.892	Tons/yr
Lwd =	Withdrawal Loss =	0.008	Tons/yr
Lf =	Deck Fitting Losses =	1.719	Tons/yr
Ld =	Deck Seam Loss =	0.317	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>2.936</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft <sup>2</sup> •yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	35 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)(D)\*(Mv)\*(Kc) = 1784.760 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	65658 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	35 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 15.231 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	9	33	297
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	1	56	56
Sliding Cover, Ungasketed.....	0	76	0

**Roof Leg or Hanger Well:**

Adjustable.....	6	7.9	47.4
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 451.8**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 451.8 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 3438.613 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 633.989 lb/yr**

Tanks with welded decks do not have deck seam losses

The End

**Hammond Department of Environmental Management  
Emission Inventory System Update (EIS)  
Storage of Organic Liquids ... AP-42 ... Section 7**

**Internal Float Roof Tank**

**General Information:**

Company Name ..... **Buckeye Terminals, LLC**  
Year of Data ..... **2003**  
Plant ID # ..... 089-00239

**Tank Information:**

Tank ID # ..... **D-92**  
Tank Shell Diameter..... 35 feet  
Tank Shell Height..... 29 feet  
\*Tank Shell Type (Welded or Riveted)..... Welded  
\*Tank Deck Type (Welded or Bolted)..... Bolted  
\*Tank Rim Seal Type..... Vapor Mounted  
Tank Capacity (max liquid)..... 210,000 gallons

**Product Information: \*\***

Product Stored..... Gasoline  
Vapor Molecular Weight..... 62.00 lb/lb-mole  
True Vapor Pressure @ 60° F..... 5.7260 psia - @ 60° F  
Average Organic Liquid Density..... 4.90 lb/gal  
Annual Product Throughput..... 2,757,616 gallons/yr

\*if this information changes, see calculations

if tank contains crude oil, see calculations

\*\*This product information available in the AP-42, Section 7.

Lr =	Rim Seal Loss =	0.892	Tons/yr
Lwd =	Withdrawal Loss =	0.008	Tons/yr
Lf =	Deck Fitting Losses =	1.719	Tons/yr
Ld =	Deck Seam Loss =	0.317	Tons/yr

<b>Lt = Lr + Lwd + Lf = Total Loss =</b>	<b>2.936</b>	<b>Tons/yr</b>
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**See AP-42, Section 7, for clarification of the following calculations:**

\* asterisked items change with rim seal information (see AP-42, Section 7)

**Rim Seal Loss:**

* Kr = seal factor (see Table 7.1-14) =	6.7 lb-mole/ft•yr
P* = vapor pres. function - Equation (3-3) =	0.122757 dimensionless
D = tank diameter =	35 feet
Mv = vapor molecular weight (Table 7.1-3)	62.00 lb/lb-mole
<b>crude?</b> Kc = product factor, Kc = 0.4 for crude oils,	1.0
Kc = 1 for all other organic liquids	

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**Lr = Rim Seal Loss = (Kr)\*(P\*)(D)\*(Mv)\*(Kc) = 1784.760 lb/yr**

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**Withdrawal Loss:**

Q = annual throughput, (42 gal/bbl) =	65658 bbl/yr
WL = ave. organic liquid density (Table 7.1-3) =	4.9 lb/gal
D = tank diameter =	35 feet
Nc = number of columns =	6
C = shell clingage factor, (see Table 7.1-10) =	0.0015 bbl/1000 sqft
C = 0.006 for crude oil	

**Lwd =**

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**Withdrawal Loss = (0.943\*Q\*C\*WL/D)(1+Nc/D) = 15.231 lb/yr**

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**Summary of Internal Float Roof Tank Deck Fitting Loss Factors**

for typical numbers based on tank diameter, see AP-42, Table 7.1-16  
if tank-specific data is unavailable use Figures 7.1-24 and 25

Deck Fitting Type	Quantity	Factor	Total
<b>Access Hatch:</b>			
Bolted Cover, Gasketed.....	1	1.6	1.6
Unbolted Cover, Gasketed.....	0	11	0
Unbolted Cover, Ungasketed.....	0	25	0
<b>Automatic Gauge Float Well:</b>			
Bolted Cover, Gasketed.....	1	5.1	5.1
Unbolted Cover, Gasketed.....	0	15	0
Unbolted Cover, Ungasketed.....	0	28	0
<b>Column Well:</b>			
Builtup Column - Sliding cover, Gasketed.....	9	33	297
Builtup Column - Sliding Cover, Ungasketed.....	0	47	0

Pipe Column - Flexible Fabric Sleeve Seal.....	0	10	0
Pipe Column - Sliding Cover, Gasketed.....	0	19	0
Pipe Column - Sliding Cover, Ungasketed.....	0	32	0

**Ladder Well:**

Sliding Cover, Gasketed.....	1	56	56
Sliding Cover, Ungasketed.....	0	76	0

**Roof Leg or Hanger Well:**

Adjustable.....	6	7.9	47.4
Fixed.....	0	0	0

**Sample Pipe or Well:**

Slotted Pipe - Sliding Cover, Gasketed.....	1	44	44
Slotted Pipe - Sliding Cover, Ungasketed.....	0	57	0
Sample Well - Slit Fabric Seal, (10% open area)..	0	12	0
Stub Drain, 1" diameter.....	0	1.2	0

**Vacuum Breaker:**

Weighted Mechanical Actuation, Gasketed.....	1	0.7	0.7
Weighted Mechanical Actuation, Ungasketed.....	0	0.9	0

**Total Deck Fitting Loss Factor (Ff) = 451.8**

**Deck Fitting Loss:**

Ff = total deck fitting loss factor (Table 7.1-16) = 451.8 lb-mole/yr  
(go to cell G47)

P\*,Mv, and Kc as defined in above calculations

**Lf = Deck Fitting Losses = (Ff)\*(P\*)\*(Mv)\*(Kc) = 3438.613 lb/yr**

**Deck Seam Loss:**

Kd = deck seam loss per unit seam length factor= 0.34 lb/mole/ft-yr

**(0.0 for welded deck, 0.34 for bolted deck)**

Sd = deck seam length factor = 0.2 ft/sqft

D,P\*,Mv, and Kc are as defined above

**Ld =**

**Deck Seam Loss = (Kd)\*(Sd)\*(D^2)\*(P\*)\*(Mv)\*(Kc)= 633.989 lb/yr**

Tanks with welded decks do not have deck seam losses

The End